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NOTES ON THE NON-MALAYAN RACES OF THE MALAY PENINSULA.

IT is proposed, from time to time as materials accumulate, to publish in this journal brief accounts of the various non-Mahomedan tribes of the Malay Peninsula, derived in all cases from actual and recent observations. The status of many of the communities has changed, and is changing, so rapidly that it seems desirable to place on record with as little delay as may be such information as has been obtained, even though the facts are not novel or apparently trivial, reserving to some future period any general correlation of results or discussion of the facts already recorded or recently elicited.

For the convenience of persons more specially interested a bibliography is given with each series of notes, the papers marked with an asterisk referring entirely to the district under discussion, while those not so marked are of a more general character.

H. C. ROBINSON.

I.—NOTES ON THE BESISI OF TAMBOH, KUALA LANGAT, SELANGOR.

BY I. H. N. EVANS, B.A., ASSISTANT, F.M.S. MUSEUMS.¹

(PLATES I AND II.)

SKeat AND BLagDEN.—

“The Pagan Tribes of the Malay Peninsula.” Two Volumes.
London, 1905.

MARTIN, RuDOLF.—

“Die Inlandstämme der Malayischen Halbinsel.” Jena, 1905.

WILKINSON, R. J.—

“Papers on Malay Subjects.” Supplement: “The Aboriginal Tribes.” Kuala Lumpur, 1910.

* BELLAMY, G.—

“The Sakais of Selangor, Kuala Langat.” *Selangor Journal*, iii, pp. 224-230. Kuala Lumpur, 1895. (Reprinted from a Government Report, dated 1886.)

* SKeat, W. W.—

“Vocabulary of the Bেসি Dialect.” *Journ. Straits Branch Royal Asiatic Society*, No. 29, p. 13, *et. seq.* (1896). Singapore.

SKeat, W. W.—

“Sakai Tribes in Selangor, Kuala Langat District.” *Selangor Journal*, v, pp. 325-333, 361-366, 392-395. Kuala Lumpur, 1896.]

¹ A few paragraphs in square brackets [] have been added by me.—
H. C. ROBINSON.

The following notes were made in the months of May and June, 1912, during a ten days' stay among the Besisi of Tamboh, in the Kuala Langat District of Selangor, situated on the coast, about half-way between Batu and Sepang.

The Besisi though still clinging to a certain degree to their old roving habits have been greatly affected by the advance of civilization, many of them now even being able to ride bicycles, which they borrow from the Chinamen. In clothing, with some slight modifications, they follow Malay fashions and bark cloth is no longer made.¹ The use of the blowpipe also appears to be rapidly dying out, partly, the Besisi told me, owing to much ground having been cleared in the neighbourhood, which makes it difficult for them to find an Ipoh tree (*Antiaris toxicaria*) from which to obtain poison for their darts.

1. NAME OF TRIBE.

The Kuala Langat aborigines will not acknowledge the name *besisi* as a tribal designation but call themselves *sehabat* or *sabat*. What they say is this: "The hill people whom we call *orang bukit* call our speech *sisi*. We call the hill people *orang bukit* but their language *blandas*. The name of our people is *orang sabat*, that of our language *sisi*."

[The term "Besisi" has become so standardised as connoting a perfectly definite section of the aboriginal population that the substitution of a new name, even if technically correct, would only cause confusion in the literature. In this series of papers, therefore, *Besisi* will continue to be used.]

2. PHYSICAL CHARACTERS.

HAIR.—The hair is generally cut quite close to the head, though some of the men prefer to let it grow to two or two and a half inches in length. A few of the boys wear it in the manner of Malay children who have not yet been circumcised, others again have it cut short, and in one case I observed that a youth's head had been shorn so as to leave a rather long curly fringe about two inches broad in front, while the hinder parts of the head were covered with only short hair. This boy's hair besides being curly showed a distinct reddish tinge. A tendency to ulotrichy was observed in several individuals, but though in the case of the boy above mentioned the ringlets were fairly tightly wound, they could not be compared with the peppercorn structure which I have seen in photographs of typical Semang.

SKIN COLOUR.—The average skin colour is No. 29 of Broca's chart for the body, and between 28 and 29 for the face, the skin colour of

¹ The Besisi of Morib, Batu, and the vicinity both made and used bark cloth as late as the middle of 1908.—H. C. R.



I. H. N. Evans, Photo.

GROUP OF RESIDENTS, TAMBOUR, KUALA LANGAT, SELANGOR.

the young being usually lighter than that of adults. In many cases it was noted that the skin of the body was as dark or sometimes darker than that of the face; this may possibly be due to the Besisi being a people who are not very cleanly in their persons and partly also to their being largely occupied in fishing, during which employment, no doubt, the majority of their clothes are discarded.

FACIAL APPEARANCE.—The cheek-bones are, as a rule, fairly prominent. In a few men the angle of the lower jaw was very much developed, which gave the face a very square appearance. The forehead was generally low and somewhat rounded. The eyes in some cases were set at a considerable angle from the horizontal and the Mongolian Fold was developed to a very slight extent in a few individuals.

MEASUREMENTS.—The length and breadth of the head were taken in twenty-five adult males.

The greatest length was 188 mm. and the least 168 mm., the mean being 176.9 mm.

The greatest breadth was 148 mm. and the least 136 mm., the mean being 142.0 mm.

The average cephalic index was 80.2, ranging from 84.6 to 73.1.

The Besisi are, therefore, just on the lower limit of brachycephaly and have a cephalic index about four points below the Peninsular Malay who averages about 84.

No.	Head Length.		Head Breadth.		Cephalic Index.	
		Mm.		Mm.		
1	...	181	...	147	...	81.2
2	...	174	...	140	...	80.4
3	...	180	...	143	...	79.4
4	...	169	...	143	...	84.6
5	...	176	...	147	...	83.5
6	...	175	...	142	...	81.1
7	...	178	...	144	...	80.8
8	...	177	...	141	...	79.6
9	...	188	...	148	...	78.7
10	...	173	...	141	...	81.5
11	...	174	...	141	...	81.0
12	...	176	...	147	...	83.5
13	...	175	...	142	...	81.1
14	...	173	...	137	...	79.1
15	...	177	...	147	...	83.0
16	...	176	...	146	...	82.9
17	...	176	...	139	...	78.9
18	...	177	...	139	...	78.5
19	...	170	...	136	...	80.0

No.	Head Length.		Head Breadth.		Cephalic Index.	
		Mm.		Mm.		
20	...	183	...	144	...	78.6
21	...	180	...	140	...	77.7
22	...	182	...	141	...	77.4
23	...	186	...	136	...	73.1
24	...	179	...	140	...	78.2
25	...	168	...	138	...	82.1
Mean	...	176.9	...	142	...	80.2

3. MODE OF LIFE.

The main crop planted is rice, swamp rice, *padi paya*, and hill rice, *padi bukit*. The ordinary wet rice, *padi sawah*, which necessitates irrigation, is not grown. Fishing and trapping are also Besisi occupations and some of the traps are very ingenious. At the present time a large number of men are working as jungle-fellers on a neighbouring estate, but they are largely in the hands of the local Chinese shop-keepers to whom they are always in debt and whom the local planters find it necessary to employ as intermediaries when engaging labour. The Chinaman gets a commission on the transaction and ensures the repayment of the advances which he makes in money and kind to the Besisi.

4. HOUSES.

The Besisi house is generally a wretched and very dirty one-roomed bamboo-walled hut, raised on piles, containing only a few cooking pots, mats, fish traps and possibly a spear or blowpipe. The Batin's house was the cleanest and best built of any that I visited; it was roofed with palm leaves, and besides the usual rough household furnishings contained some fine mats and a couple of handsome blowpipes.

The Besisi seems to shift house pretty frequently as the soil of his clearing soon becomes exhausted and he prefers to build again in the fresh *ladang* rather than walk to it from his old hut. This custom, of course, militates greatly against any development of the art of house-building.

The fireplace is of earth, banked in by pieces of wood, and is placed near a wall in the only room. As in Malay houses there is generally a shelf above it on which cooking pots and firewood are stored.

5. MANUFACTURES.

A list of the collections obtained from the Besisi is given below.

Many articles in everyday use are, of course, obtained from the Malays and Chinese, among these being cloth, jewellery, pots and pans, spears, etc. Some things, such as drums (*rebana* and *gendang*) and kites, though probably of Malay origin, are at the present time



I. H. N. Evans, Photo.

BESISI BOYS, TAMBOH, SELANGOR.

made by the Besisi themselves, who also produce excellent *pandan* and *mengkuang* mats and baskets, snares of *rotan*, and blowpipes. The musical instruments observed, besides those mentioned above, were two forms of flute, a bamboo "harp" with strings of *rotan* (the instrument known to Malays as *gendang batak*) and bamboo stampers. They told me that the fruit season is the great time for giving musical parties.

The Besisi prahu follows the Malay pattern.

COLLECTIONS MADE AMONG THE BESISI (ORANG SABAT), TAMBOH, KUALA LANGAT, SELANGOR, MAY-JUNE, 1912.

BASKET WORK, TRAPS AND ROPE.—

- (1) Rice sack (*karong bras*) made of *pandan* with dyed red pattern. Height, 517 mm.; diameter, 231 mm.
- (2) Small mat of fine work, ornamented with violet dye, in two layers, face of *pandan*, back of *mengkuang*. Upper layer the finest work. Edges bound with red cloth. 660 mm. by 345 mm.
- (3) Round open pinang basket of *pandan*, white with plaited ornaments. Diameter, 135 mm.
- (4) Small covered tobacco basket (*bujam*) made of white *pandan*, corners peaked at top and bottom. 120 mm. by 60 mm.
- (5) Small *pinang* pouch (*upan*) made in two pieces; of *pandan*, decorated with violet dye. 55 mm. by 53 mm.
- (6) Small circular, closed *gambir* basket of *pandan* with raised points on base and lid (*tumboh*). Diameter, 50 mm.
- (7) Small betel wallet of *pandan* with plaited ornament, edges bound with European cloth, fold-over flap with cord, and double cord for attaching to body. Inner lining (loose) of coarsely plaited *mengkuang*. 125 mm. by 90 mm.
- (8) Small winnowing tray (*nyiru*) pear-shaped in outline, made of *bemban* (the stems of *Clinogyne* sp.). Length, 420 mm.
- (9) Soft carrying basket (Besisi, *sentorkⁿ klet*) made of *mengkuang* with cord of *tërap* bark for attaching to body.
- (10) Water bailer (Besisi, *timba mők*) made of the flower spathe of a palm, apparently *nibong*.
- (11) Carrying basket (*ambong*) of *rotan* with cord of *tërap* bark. Height, 356 mm.; diameter, 230 mm.
- (12) Fish trap (*buba*) with two compartments and piece of wood at hinder end which slips out to enable the catch to be extracted. Made of *bemban*. Length, 560 mm.; diameter, 243 mm.
- (13) Cord of twisted bark *antui* (Besisi) *kayu g'haru* (Malay). [*Antui* is a Malay word applied, *vide* Ridley (*Journ. Straits Branch Royal Asiatic Society*, No. 30, p. 39, 1897),

to *Drepananthus*, a genus of Anonaceous trees, tall and straight but never of any large size. *Gcharu* is incense or eagle wood, *Aquilaria malaccensis*, of which there are several forms, frequently called *chandan* by Malays. In the Tembeling the bark of young specimens of the latter species is also used as cordage.]

(14) Pelandok trap (*Jerat leher*) see *postea*, p. 7.

(15) Pelandok trap (*Jerat jong*, *jong*=*kaki*) see *postea*, p. 7.

(16) Bird lime apparatus—

The holder is called *tomak* and the limed sticks *gleger*.

[The gettah employed as lime is obtained from the *kayu ara* (a generic name for species of *Ficus*), the gettah itself being called *gettah bagu*.

Malays and many Sakais use for this purpose the gettah from wild or cultivated species of chempedak and jack fruit (*Artocarpus* spp.). *Bagu*, according to Wilkinson, is a plant name doubtfully referable to *Gnetum gnemon*.]

MUSICAL INSTRUMENTS.—

(17) Long flute with three stops made of bamboo (*ding byu*). Length, 594 mm.

(18) Small flute with three stops and some attempt at ornamentation (*Besisi, Tebon*). Length, 357 mm.

The *Besisi* state that they do not use nose flutes.

(19) Two bamboo stampers (*Besisi, ding tengkeng*). Lengths 253 and 213 mm.; diameter, 43 and 39 mm.

(20) Bamboo harp with three rotan strings (*Besisi, Ding banyeng*). Length, 410 mm.; diameter, 38 mm.

FIRE-MAKING APPARATUS.—

(21) Several sets of saw-method apparatus (*Besisi, gesek, sama chong, chong*=cord), saw of *rotan*, wood *kayu mahang* (*Macaranga* spp. soft wood trees with large leaves). c.f. *postea* p. 8.

(22) Several sets of drill-method apparatus (*Besisi, gesek sama te*=hands) drill and block of *mahang*. c.f. *postea* p. 9.

BLOWPIPES AND APPARATUS.—

(23) Blowpipe (*Besisi, blan*). Mouthpiece, conical. Outer case decorated towards mouthpiece and also near distal end. Intervening portion smooth. Distal end covered with gettah (*ambalau*). Inner tube in two pieces. Length, 1,772 mm.

(24) Leaves for polishing blowpipe darts (*Besisi, chinrat domok*). [Skeat (*op. cit.* i, p. 311) gives this word as *chengat*. The leaves are the same as those known to the Malays as *dauu mempelas* (*Dehnia sarmentosa*) which are used in place of sand-paper for polishing by Malay craftsmen.]

- (25) Materials for making blowpipe darts, together with one completed dart.
- (26) Quiver (Besisi, *lók*) with somewhat conical cap. Inside lined with reeds lashed to quiver to contain separate darts. Cap filled with down (*rabok*) from the base of the leaf stalks of a palm.

MISCELLANEOUS.—

- (27) Various decorations made by the Besisi for use at a Malay marriage—*viz.*:

Bunga pinang;

Kris;

Kumber (a palm, *Zalacca wallichiana*, Mart.);

Bunga serai (lemon-grass);

Subang (ear-studs);

Buah jerei (? *jering*) (*Pithecolobium* spp.).

[These ornaments, which are made out of plaited palm leaves, are very characteristic of many of the Selangor aboriginal tribes. Dr. Amundale and myself met with similar objects among the "orang bukit" of the Kuala Lumpur district in 1902 (*cf. Fasciculi Malayenses, Anthropology*, i., p. 51, 1903).]

6. TRAPS.

PELANDOK TRAP (*Jerat Leher*).

The *jerat leher* is a slip noose trap which is set in a pelandok (mouse-deer) track. The noose is arranged so that the *pelandok* shall get its head into it and in its struggles to become free pull the loop of the cord from under a peg, which holds down a bent bamboo. When the tension on the bamboo is thus released it springs back to its original position and in doing so it tightens the cord round the pelandok's neck, effectually hanging it.

PELANDOK TRAP (*Jerat jong*).

This is a noose trap for the feet which is set with a springe and trigger. A young and flexible bamboo is first fixed upright in the ground and to the top of it a rotan cord nineteen or twenty inches long is attached, at the end of which is a small peg, blunt at one end but sharpened at the other. The rotan cord, which is otherwise single, is strengthened by its end being twisted round the peg and then for about an inch upwards. At the upper end of this twisted portion of the rotan a cord of *t'rap* bark is attached which ends in a ring. Before setting the trap this ring is threaded back over the cord so that a running noose is formed. When the bamboo springe has been fixed in position and the noose made, a piece of bamboo about sixteen inches long is taken and bent to form a flat-topped arch. This, when its ends have been sharpened, is fixed firmly in the ground. The cord with the peg is led under the arch, that with the noose above it. The peg is placed so as to rest with its blunt end against the top bar

of the arch. A U-shaped framework of rotan, with transverse lashings of the same material, is then placed partly under the arch, and the portion of the U where the limbs join is raised from the ground until it is supported by the sharpened end of the peg. When this has been done the noose is arranged over the rotan framework and the trap is thus set. Any animal putting its foot into the noose and treading on the framework underlying it causes the latter to fall. This releases the small peg or trigger from under the arch and the tension on the rotan cord being thus relaxed the bamboo springs back to a more perpendicular position, at the same time tightening the noose around the animal's leg.

[Both these traps are almost universally in use from Nepal and Assam, eastwards throughout Indo-China and the Malay Peninsula and all over the Greater Sunda Islands and are used by all the races inhabiting this area indifferently. A good figure of the second form described above is given by Ling Roth (*The Natives of Sarawak and British North Borneo*, i., pp. 430, 431, figs. 1896).]

7. PATTERNS ON BLOWPIPES.

Whatever the patterns on the Besisi blowpipe may have been in former times, they are at the present very degenerate, consisting as a rule of meaningless roughly engraved circles running round the stem. The spaces between these are sometimes filled up with rude slanting lines running from circle to circle. On one blowpipe there were a few drawings which I was told represented spiders (*Bes. jamang*). The men said that the circle and the marks between them had no meaning but were simply decorations.

8. FIRE-MAKING.

Besides the universal Swedish or Japanese match and the flint and steel, two methods of fire-making are known to the Besisi, which, however, are now only survivals—the rotan saw and the drill—the former being called *gesek sama chong*, Malay, *gesek sama tali*, the latter *gesek sama tee*, Malay, *gesek sama tangan*.

In the first method a piece of soft dry wood (*mahang*) twelve or eighteen inches in length is obtained. In this an oval boat-shaped hole is made which is about three inches in length and reaches right through the wood, having only a small opening on the lower surface.

In producing fire, a strip of rotan about two feet long, to the ends of which two cross pieces of wood are tied to serve as handles, is passed under the piece of soft wood which rests on the ground with the smaller orifice of the hole directed downwards. When the rotan has been adjusted so that it covers the smaller hole (a groove is often cut to receive it) the ends of the piece of wood are held down, each by one of the fire-maker's feet. The handles of the rotan cord are then grasped in the hands and the rotan is slowly sawed backwards and forwards over the hole in the under surface of the wood. The pace of the motion is gradually increased until the rotan has eaten

deeply into the wood, and the dust produced by the friction begins to be forced up into the cavity in the block of wood. After a time this dust ignites owing to the heat produced by the constant friction, and the smouldering tinder is then turned out and fanned to a blaze. As soon as fire has been produced the rotan becomes charred in the middle and snaps into two halves.

In the second method two pieces of the same soft wood are used, one of these, about a foot long with a diameter of half an inch, being carefully rounded to form a drill, while the other, which may be a foot or more long, has a vertical V-shaped groove cut into it on one side, the point of the V being directed inwards. The piece of wood with the groove in it is held down with the feet and the drill is then placed at right angles to the block with its point at the innermost edge of the cut, where a small cup-shaped depression has been made to prevent it slipping out and to give it a purchase. The top of the drill is then taken between the palms of the hands and rubbed downwards slowly with a backwards and forwards motion. It is then re-grasped in a similar manner as quickly as possible and the action repeated again and again. The rapidity of the motion is gradually increased until a deep hole is formed and the dust from this falling into the V-shaped cut becomes ignited.

To a European the sawing method is much the easiest of the two as in the drill method the friction hurts the hands and also it is impossible for a novice to re-grasp the drill at the top quickly enough when repeating the motion.

9. TIME.

The Batin of the Besisi told me that his people have no method of measuring time other than by nights and days. He said that they did not know how to count months although they knew that the moon waxed and waned, nor did they reckon time by the *taun padi*.¹ With regard to finding the correct season for rice-planting, when they thought that the time was approaching they asked the Malays when the fasting month (*bulan puasa*) began. If they were told that it was already the *bulan puasa* they considered that it was time to plant if the weather was favourable; if not, they waited for a change.

10. CEREMONIES.

Taking the *Semangat Padi* (Rice Soul).

The following account was given to me by the Batin :

At the end of the harvest season the *pawang*² asks the people if they have all finished reaping and if they answer "Yes," he says "I will take the *semangat padi* early this morning." A patch of *padi* about as large as could be enclosed by the two hands, if the two index fingers and the two thumbs were placed together, has previously been left in the clearing. The *pawang*, taking a small knife (*pisau wali*), reaps this patch. He puts his reapings into a small

¹ Rice year.

² Shaman or magician.

bag and hangs it up in his house. Then he burns incense (*kemennyan*) under it. Nobody but the *pawang* may touch the *semangat*. When the new planting season begins the *pawang* takes the *semangat* seed and scatters it in the clearing before anyone else has sown. On the next day or the day following the general *padi* sowing begins. The *semangat* ceremony is used for *padi paya* but not for *padi bukit*.

[The last statement is interesting as the planting of *padi paya* is probably of comparatively recent date among the Besis while *padi bukit* has probably always been grown. The *semangat* ceremonies have, therefore, almost certainly been adopted from the Malays and cannot be considered as indigenous.]

MARRIAGE.—The following are a few disconnected statements concerning marriage customs which I obtained, chiefly from the *Bomor* of the Besis.

It is an unknown thing for a man to have more than two wives, though several have as many as two.

A man may select a wife from wherever he pleases. There are no rules regarding the locality from whence she has to be taken.

If both a man and his wife wish for divorce they give cloth to one another.

Both parties must be willing before a divorce can take place. The divorce is proclaimed by the *Batin*.

A man who wishes to take a wife does not have to pay either money or goods to his wife or her relations. (That is to say, there is no wife buying.)

A man gives the girl he is to marry money to buy food for the wedding feast and clothes for the marriage.

Formerly the woman on the marriage day waited at the house of her mother. The man was carried from his house to that of the woman and he might not leave it for one or two days. If the wife was not a virgin connection might take place on the first night; otherwise it was considered right to refrain for some days.

Sometimes the man stops on at the house of his wife's parents, sometimes he makes a house for himself after three or four months.

TOOTH-FILING.—Both men and women file the six front teeth of the upper jaw. This was formerly done with a stone but now the European file is in use. The operation may be performed by any friend or relation. The *bomor* told me that the tooth-filing might be done when people were "*chukup besar*." As far as I could make out it takes place at any time after the age of puberty, but always before marriage.

Tooth-blackening used to be in fashion but is now obsolete.

TATTOOING.—I observed tattooing on the arms of one or two men and women but in every case was informed that it was the work of Chinamen.

11. PANTANGS.

The following Pantangs were collected at Tambob, chiefly from the Batin.

SICKNESS PANTANG.—No stranger or person from another house may go to a house where a man is lying sick.

The reason for this would appear obvious. A man not belonging to the house might bring with him evil influences or spirits which would attack the sick man and prevent his recovery.

PADI PANTANGS.—

1. *Pantang Tikus*—When padi is being planted no one must fold his coat back over his head. If the *pantang* is broken rats will eat the crop.
2. *Pantang Babi and Pantang Rusa*—When the padi has been planted a man who is going into the jungle must both leave and return to the clearing by the same path; otherwise the deer and pig will enter the crop by one path and after going through the whole and damaging it will leave by another road.

A man who breaks this *pantang* is therefore symbolically bringing the pigs right through the crops. Probably, also, there is an element of common sense underlying the superstition for if there are many paths leading to a clearing game will become accustomed to using them and so to frequenting the clearing itself.

3. *Pantangs with regard to new clearings*—When a new clearing is being made the coat must not be turned back over the head.

A parang must not be left sticking into the top of a stump. If it is animals will come and eat the crop or it will not grow properly.

After the people have worked for the first three days on a new clearing they must stop work for a day. This is to propitiate the *hantu sheitan*.

FISHING PANTANGS.—The crocodile must not be mentioned by his real name at sea but must be called *pawang laut*.¹

Fish must not be cut up on a half-burnt log (*i.e.*, one which the fire has eaten) or crocodiles will get into the *blat*² and eat the fish.

PANTANGS FOR WOMEN AFTER CHILDBIRTH.—A woman who has given birth may not eat salt, pepper, fish or the flesh of wild animals for three days after delivery.

I was informed that there are no pantangs for a man whose wife is with child.

¹ The wizard of the sea. ² A kind of large stake trap for fish.

12. RELIGION.

The Orang Besisi of Tamboh appear to be almost without any religious beliefs. Possibly they have some and would not tell me about them, but the Batin denied that they had anything of the kind. All he would admit was that they *had* heard of the "Pulau Buah," where, according to Skeat, the soul of the Besisi dead are supposed to go. From his conversation, however, I gathered that he did not seem to think much of the idea of going to such a place, if in fact, he did not altogether disbelieve in it.

GHOSTS.—Ghosts, however, appear to be firmly believed in and the following names of *hantu* were mentioned to me, though I could not find out in some cases from whence they were derived or what was their occupation.

Hantu kayu (a wood spirit);

Jin Kafir;

Hantu Sheitan meri;

Hantu Limbas;

Hantu Kambing (which comes to eat the blood when a birth takes place).

[The last mentioned, which should possibly read *hantu kembang*, is equivalent to, if not actually derived from, the well-known Malay *pencanggalan*.]

13. LANGUAGE.

GENERAL REMARKS.—The usual difficulties were experienced in obtaining translations of words expressing some general idea. For instance, it was impossible to obtain any word for "brother" (*sudara*) though those for elder brother and younger brother were at once given in answer to the question: "What do you say for brother"? Again, when the word for "beast" was asked for my informant at once tried to descend from the general to the particular and started giving the names for elephant, tiger, etc., being unable to grasp the full meaning of the question. Much the same sort of difficulty was experienced in obtaining the Besisi for such words as "I," "thou," "he," etc., and "who," "this" and "that."

NUMERALS.—The Besisi only possess words, distinct from Malay, for the numerals: 1, 2, 3 they are as follows:

One	...	<i>nuu</i>
Two	...	<i>imbar</i>
Three	...	<i>impe</i>

VOCABULARY.—

English.	Malay.	Sisi.	Remarks.
Back	... blakang	{ kelort ⁿ kelorn	{ kelort ⁿ or kelorn. merat = The Elephant's back.
Beast	... binatang	...	?
Big	... besar	{ kadum kadöi	... u sound
Blood	... darah	... mähäm	

English.	Malay.	Sisi.	Remarks.
Boat	... prahu	... pāhū	
Body	... badan	... krēt	
Bone	... tulang	... jā-ārng	
Breath	... napas	... nōi	
Brother	... Sudara laki	... ?	
Child	... anak	... kēñōn	
Cloud	... awan	... awan	
Day	... hari	... hari	
Ear	... telinga	... turgg ⁿ	... u sound not oo
Earth	... tanah	... tēh	
Eye	... Mata	... mēt	
Father	... bapa	... wēr̄h	
Fire	... api	... us	... oo sound
Fish	... ikan	... ka	
Food	... makanan	... ?	
Foot	... kaki	... jong ⁿ	
Forest	... utan	... miree	
Ghost	... hantu	... hantu	
Hair	... rambut	... sūk (oo)	
Hard	... kras	... jēheg ⁿ	
He	... dia	... hnki	
Head	... kepala	... hoie	
Heart	... jantung	... tongul	
Hill	... bukit	... chork ⁿ	
House	... rumah	... dūkn	... oo sound
I	... sahya	... ūtn	... oo sound
Lightening	... kilat	... kilat	
Liver	... hati	... gr̄is	... (pronounced to sound like English "grace")
Man	... laki	... lemol	
Moon	... bulan	... bulan	
Mother	... ma	... gādēh	
Mountain	... gunung	... chork ⁿ	
Neck	... leher	... lēhē	... last syllable pronounced "Hay"
Night	... malam	... doi	
No	... tida	... ngot	
Nose	... hidong	... mūh	
(Is) not	... tid'ada	... hāmp	
Quick	... lekas	... yūt jūs	... both with u sound
Rain	... hujan	... gēmar	
River	... sungei	... dōh gēni	
Sea	... laut	... bow ow	
Shoulder	... bahu	... bā-hū	
Sister	... saudara peram- puan		

English	Malay.	Sisi.	Remarks.
Skin	... kulit	... kulit	
Sky	... langit	... langit	
Small	... kecil	... hēdēt	
Soft	... lembut	... lēmōt	
Slow	... lambat	... lengar	
Soul	... semangat	... semangat	
Star	... bintang	... bintang	
Stone	... batu	... batu	
Sun	... mata hari	... mēt hari	
That	... itu	... nākēh	
This	... ini	... nāhōh	
Thunder	... guruh	... guruh	
Tongue	... lidah	... lidah	
Tooth	... gigi	... lemoin	
Tree	... pokok kayu	... lork ⁿ	
Water	... ayer	... dōh	
We	... kita	... kita	
Who?	... siapa	... hmak	
Wind	... angin	... bū-ah	... u has oo sound
Woman	... perempuan	... kādū	... u has sound of oo
Yes	... yah	... nah	
You	... engkau	... how	
Come here			
quickly	... mari sini dras	jōhōt jus	
Go there	... pergi sana	... choho keh	
I shall go to the			
coast	... mau pergi laut	Che bowow	
Where are you			
going?	... pergi mana	... Chōh hādung	

NOTES ON BIRDS NEW TO, OR RARE IN, THE MALAY PENINSULA.

(THIRD SERIES.)

By H. C. ROBINSON, C.M.Z.S., M.B.O.C.

THE present notes continue those published in this journal, vol. IV, pp. 129-133 and pp. 229-233, and relate to species obtained in the ordinary course of collecting during the last eighteen months in the Federated Malay States and the adjacent portions of the Malay Peninsula.

CALOBERDIX OCULEA (TEMML.)

Caloerberdix oculatea (Temm.): *Ogilvie Grant, Cat. Birds Brit. Mus.*, xxii., p. 222 (1893); *Robinson and Kloss, Ibis*, 1910, p. 671.

This handsome Jungle-Partridge, which is extremely rare in collections, was found to be by no means uncommon in swampy jungle at the foot of precipitous limestone hills near Pelarrit in Perlis, a small state in the north of the Peninsula, bordering on Kedah. Our collectors secured numerous specimens and also observed that it was kept in captivity by the local Malays who fed it on termites or white ants. Caged specimens, however, were said not to be long-lived.

A single male was also shot in February, 1912, at the height of 3,000 feet on Menang Gasing, a mountain in the main range of the Peninsula near the junction of the boundaries of the three states, Selangor, Negri Sembilan and Pahang.

As noted elsewhere, the locality "Malacca" for four specimens in the British Museum is open to grave suspicion, the skins having most probably been obtained by Malacca bird-hunters from some district in the north of the Peninsula.

Males differ from the females in the slightly larger size, most noticeable in the bill, and in the presence of a blunt tarsal spur or knob, which is sometimes reduplicated. Less adult specimens have the V-shaped black markings on the flanks encroaching on the centre of the breast.

ARBORICOLA CHARLTONI (EYTON).

Arboricola charltoni (Eyton); *Ogilvie Grant, Cat. Birds Brit. Mus.*, xxii., p. 221 (1893).

A single female specimen was obtained at Pelarrit, Perlis, in November, 1911. Throughout the Malay Peninsula this partridge is a very rare bird though common in the vicinity of Lenggong in Upper Perak, but in the first few months of 1912 it suddenly appeared in considerable numbers on the lower slopes of the Larut Hills, in the vicinity of Taiping, Perak. Large numbers were snared by the Malays and several are now in the gardens of the Zoological Society, London.

The locality "Penang" attributed to six specimens in the British Museum is certainly erroneous, the birds having probably been brought over alive to Dr. Cantor from Kedah or Perlis.

LOPHURA RUFA (RAFFLES).

Lophura rufa (Raffles); *Ogilvie Grant, Cat. Birds Brit. Mus.*, xxii., p. 286 (1893).

The Fire-back Pheasant, though not uncommon in certain localities, is not an easy bird to snare or shoot and the local museums are very deficient in specimens. Two males, adult and immature, were secured at Pelarit, Perlis, in November, 1911, by our Dyak collectors.

OSMOTRERON BICINCTA (JERD.).

Osmotreron bicincta (Jerd.); *Salvadori, Cat. Birds Brit. Mus.*, xxi., p. 57 (1893); *Robinson and Kloss, Ibis*, 1910, p. 674.

Out of several hundreds of the common *O. vernans* shot by Mr. Seimund during the 1910-12 seasons, three—two males and a female—shot on 30th November, 1910, and 1st February, 1912, proved to be of this species. Whether it comes south during the winter months or is resident throughout the year in the Malay Peninsula is not yet ascertained but all the specimens hitherto obtained have been shot between November and February.

OSMOTRERON VERNANS (LINN.) VAR.

Osmotreron vernans (Linn.); *Salvadori, Cat. Birds Brit. Mus.*, xxi., p. 60 (1893).

Among a large number of this species shot in Taiping during the last two years are two specimens—a male from Kamunting, obtained on 13th June, 1911, presented by Mr. Gray, and a female from Simpang, dated 1st February, 1912, shot by Mr. Seimund—which show a variation not uncommon among the members of this sub-family (*Treroninæ*) consisting of a defect of yellow pigment so that those portions of the plumage which are normally yellowish green become greyish green or pearly grey. The opposite variation in which there is an excess of yellow pigment so that the whole bird becomes more or less of a canary yellow colour is also not uncommon and specimens representing this phase have also been obtained near Taiping.

RALLINA FASCIATA (RAFFLES).

Rallina fasciata (Raffles); *Sharpe, Cat. Birds Brit. Mus.*, xxiii., p. 75 (1894).

Rails of these genus are by no means common in the Malay Peninsula though possibly more numerous in the northern districts. During a short stay at the end of October, 1911, at Alor Stah, the capital of Kedah, which is surrounded by large areas of alluvial rice lands, we found that this species was being hawked about the streets in large numbers at a rate equivalent to two for a penny. Slightly further north in Perlis it was also not uncommon in the rice

fields. The other species of the genus *Rallina superciliaris* (Eyton) is very much rarer and is represented by four or five specimens only in the Federated Malay States Museums.

DROMAS ARDEOLA, PAYKULL.

Dromas ardeola, Paykull; *Sharpe, Cat. Birds Brit. Mus.*, xxiv., p. 28 (1896).

The Crab Plover does not appear to have been recorded from further east than the Andaman Islands or on the eastern shores of the Bay of Bengal. On 24th September, 1912, Mr. Seimund shot three specimens, none of them quite adult, out of a flock of six met with on the mud-flats near Pulau Pintu Gedong, Klang Straits, Selangor.

HYDROCHELIDON LEUCOPTERA (MEISN. & SCHINZ).

Hydrochelidon leucoptera (Meisn. and Schinz); *Saunders, Cat. Birds Brit. Mus.*, xxv., p. 6 (1896).

The whiskered Tern was noted in considerable numbers in breeding plumage in Penang harbour in March, 1911, but specimens were not obtained. A large series of immature birds and birds in winter plumage were secured in the same place in October, 1911. The species seems to be not very common in Malayan waters.

STERNA ANÆSTHETA, SCOP.

Sterna anæstheta, Scop.; *Saunders, Cat. Birds Brit. Mus.*, xxv., p. 101 (1896); *Oates, Cat. Birds Eggs Brit. Mus.*, i., p. 190 (1901).

Two small rocks about 150 feet high, between the islands of Sri Buat and Tioman, off the coast of Pahang, on the eastern side of the Peninsula, are frequented by myriads of this tern. We visited these rocks, which are known as Tokong Burong, on 15th June, 1912, and secured a considerable number of eggs which were much incubated, though no young birds were seen. The rocks are almost precipitous with flat tops and are covered with a wiry grass growing in isolated tussocks. The eggs are laid singly underneath or by the side of these tussocks and take a good deal of finding.

Of the series of fifteen before me the ground colour varies from greenish white to pinky brown, and there is an equally wide range in the character of the mottling which varies from an almost evenly distributed speckling of dull pinkish brown to bold blotches of rich chocolate brown, either evenly distributed over the shell or congregated at the larger end. In all the specimens there are underlying markings of clouded pinky-buff which, as Oates remarks, are not very conspicuous.

One egg, which was unfortunately smashed in descending the rock, was almost pure white without any markings. There were many thousands of the terns around the rock all in full breeding plumage with the steamers well developed, and intermixed with them were a few *Sterna melananchen*, of which, however, we did not find the eggs in this locality.

STERNA MELANAUCHEN. TEMM.

Sterna melanauchen. Temm.: *Saunders, Cat. Birds Brit. Mus.*, xxv., p. 126 (1896); *Oates, Cat. Birds Eggs Brit. Mus.*, i., p. 195, pl. xv., fig. 3 (1901).

The Black-naped Tern breeds sparingly on the rocks and cliffs of the islands of Sri Buat, Tioman, Pemanggil and Aor, off the coasts of Pahang and Johore, not, as a rule, at any great height above sea-level. The eggs are always single and are laid in slight depressions of the rock without any attempt at a nest or concealment. Twelve eggs, all obtained on Pulau Aor, vary less among themselves than is the case with those of *St. anaetheta*, the differences being mainly in the size and tint of the larger olive brown blotches. An average egg measures 41 × 28 mm.

METOPIDIUS INDICUS (LATH.).

Metopidius indicus (Lath.); *Sharpe, Cat. Birds Brit. Mus.*, xxiv., p. 76 (1896); *Blanford, Faun. Brit. Ind. Birds*, iv., p. 219 (1898).

Blanford (*loc. cit.*) gives the range of the Bronze-winged Jacana as extending to the Malay Peninsula though I have been unable to find any authority for his statement and had therefore excluded it from my Hand-list of the Birds of the Malay Peninsula.

A single specimen was, however, shot among thick vegetation at the edge of a pond at Asam Kumbang, near Taiping, Perak, by the Chinese Taxidermist of the Perak Museum on 14th December, 1911, and a companion bird was seen. The species must therefore be added to the Peninsular list.

NETTION CRECCA (LINN.).

Nettion crecca (Linn.); *Salvadori, Cat. Birds Brit. Mus.*, xxvii., p. 243 (1895).

A female teal was shot in the vicinity of Kuala Lumpur, Selangor, in April, 1912, by Mr. J. Galloway, to whom the museum is indebted for many rare birds, and presented by him to the Selangor Museum. I had overlooked the occurrence of this bird in the Peninsula but a female collected by Dr. Maingay in the territory of Malacca is in the British Museum collection.

I do not know of any other instance of its occurrence within our limits.

NETTION FORMOSUM (GEORGI).

Nettion formosum (Georgi); *Salvadori, Cat. Birds Brit. Mus.*, xxvii., p. 240 (1895).

My Malay assistant on a visit to his home on the Bruas river in the Dindings territory, north of the mouth of the Perak river, bought from a local Malay two pairs of the Baikal Teal. The original owner stated that he had caught them as ducklings in the river with a casting net (*jala*) but it is probable that they were the offspring of a domesticated pair.

UPUPA INDICA. REICHENB.

Upupa indica, Reichenb; *Salvin, Cat. Birds Brit. Mus.*, xvi., p. 10 (1892).

Mr. Seimund shot a female at Kamunting, near Taiping, Perak, on 5th November, 1911, which is the most southerly record for the species and the only record for the Federated Malay States. In the same month our collectors found it common at Padang Sireh, on the Perlis-Senggora border.

BATRACHOSTOMUS AFFINIS. BLYTH.

Batrachostomus affinis, Blyth: *Hartert, Cat. Birds Brit. Mus.*, xvi., p. 643 (1892).

Though skins of the three local species of Frogmouths appear to have occurred fairly frequently in the old Malacca collections, the more recent collectors do not seem to come across them often, and I have not myself examined more than ten or twelve specimens in the flesh or in recent skins.

Our collectors obtained a single female of this species at Parit, on the Perak river, on 14th September, 1911. It was with the succeeding species shot at dusk on the edge of a patch of swampy jungle.

BATRACHOSTOMUS STELLATUS (GOULD).

Batrachostomus stellatus (Gould): *Hartert, Cat. Birds Brit. Mus.*, xvi., p. 639 (1892).

A single female was shot in the same locality as the preceding on 17th September, 1911.

CHÆTURA INDICA. HUME.

Chætura indica, Hume; *Hartert, Cat. Birds Brit. Mus.*, xvi., p. 475 (1892).

A male of this form was shot by Mr. J. M. Gray at Simpang, near Taiping, Perak, on 17th December, 1911. Another was shot by Mr. C. Burn-Murdoch at Kajang, Selangor, on 26th November, 1912, in mistake for a snipe. The few specimens of this species on record from the Peninsula have all been obtained in the winter months while *Ch. gigantea* is resident throughout the year.

INDICATOR ARCHIPELAGICUS. TEMM.

Indicator archipelagicus, Temm; *Shelley, Cat. Birds Brit. Mus.*, xix., p. 4 (1891); *Robinson and Kloss, Ibis*, 1911, p. 44.

Owing to a very dry season and the consequent profuse flowering of the *nerum* trees (*Dipterocarpus crinitus*) the Tahan river and the lower slopes of the mountain were in July, 1911, invested with incredible multitudes of bees which made life a burden during the daytime. Perhaps as a corollary we secured two specimens of the Malayan Honey Guide, both males, with the yellow shoulder spot well developed. In the previous eight years' collecting we have only obtained two other specimens.

LYNGIPICUS CANICAPILLUS. BLYTH.

Lyngipicus canicapillus, Blyth: *Hargitt, Cat. Birds Brit. Mus.*, xviii., p. 322 (1890); *Robinson and Kloss, Ibis*, 1911, p., 46.

Of three birds, two males and a female, collected in November, 1911, at Padang Sireh, on the Perlis-Senggora border, one male has the central rectrices quite unspotted and is rather smaller than the other male from the same locality, the wing measuring 77 mm. against 82 mm. The wing of an adult male from Kuala Lumpur is also 82 mm., and in this specimen also the central rectrices are only very slightly spotted. In view, however, of the fact that both races occur in the same area I do not think that *I. pumilus*, Hargitt, which was founded on these differences, can be recognised as even sub-specifically distinct.

CHALCOCOCCYX MALAYANUS (RAFFLES).

Chalcococcyx malayanus (Raffles); *Shelley, Cat. Birds Brit. Mus.*, xix., p. 298 (1890).

In the central and northern portions of the Peninsula this cuckoo is a very rare bird. Two males and a female, collected by Mr. Seimund at Lenggong in Upper Perak in January, 1912, appear to be the most northerly specimens on record.

PITTA CERULEA (RAFFLES).

Pitta cerulea (Raffles); *Slater, Cat. Birds Brit. Mus.*, xiv., p. 416 (1888.); *Robinson and Kloss, Ibis*, 1911, p. 48.

A half-grown nestling obtained at Pelarit, Perlis, early in November indicate that this species breeds in the later portion of the year.

PITTA COCCINEA, EYTON.

Pitta coccinea, Eyton; *Slater, Cat. Birds Brit. Mus.*, xiv., p. 431 (1888).

Until recently this very handsome species of Ground Thrush was but poorly represented in the Federated Malay States Museums. Recently, however, we have found that it is resident throughout the year in low country swampy jungle, which is very unpleasant to collect in; and series have been obtained from Ayer Kring on the Negri Sembilan-Pahang boundary, at Rawang in Selangor, and at Parit in the lower portion of the Perak river valley.

CYORNIS RUFIGASTRA (RAFFLES).

Muscicapa rufigastra, Raffles, *Trans. Linn. Soc.*, xiii., p. 312 (1822).

Cyornis frenata, Hume, *Stray Feathers*, viii., p. 114 (1880).

Cyornis erythrogaster, Sharpe, *Hand-List Birds*, iii., p. 216 (1901).

Mr. Seimund collected a series of five specimens of this flycatcher on Pulau Pintu Gedong, Selangor, in September and October, 1912, two males and three females. The latter agree exactly with the description of *C. frenata* of which they are practically topotypes and with another female collected at Tanjong Tombak, Pulau Bintang,

south of Singapore, which was shot in company with a male agreeing in characters with *C. rufigastra*. The two males from Selangor have slightly paler undersurfaces than the latter but the difference is only trivial. There is not the slightest doubt therefore that *C. rufigastra* and *C. frenata* are male and female of the same species and those purists who reject Raffles' name as a *vox hybrida* must adopt *C. frenata* in preference to Sharpe's emendation, *C. erythrogaster*.

This species, again, is strictly confined to the mangrove zone which accounts for its comparative rarity in collections.

CYORNIS ELEGANS (TEMML.).

Siphia elegans (Temm.); *Sharpe, Cat. Birds Brit. Mus.*, iv., p. 441 (1879).

Cyornis elegans, *Hartert, Nov. Zool.* ix., p. 550 (1902) (*Pahang lowlands*).

This handsome flycatcher is extremely rare in the Malay Peninsula and the only specimen we possess is one from Padang Tuan, Segamat, North Johore, obtained by one of our Dyak collectors on 19th February, 1911.

EUPHILOSUS EUPHILOSUS (J. & S.).

Pinarocichla euphilosa (J. & S.); *Gadow, Cat. Birds Brit. Mus.*, vi., p. 62 (1881); *Oates, Faun. Brit. Ind. Birds*, iii., p. 279 (1889).

The Crested Brown Bulbul is by no means a common bird in the Malay Peninsula and is rarely found in large numbers. The Federated Malay States Museums have specimens from Selama and Parit in Perak, Tanjong Malim, Rawang and Cheras in Selangor, and from the territory of Malacca. The species seems to be mainly an inhabitant of low country jungle and is not found on the hills. The only place where it has been found at all abundantly is Rawang, where numbers were attracted by the fruiting of a species of fig tree in July, 1912.

PYCNONOTUS ROBINSONI, GRANT.

Pycnonotus robinsoni, Grant: *Kloss, Journ. Fed. Malay States Mus.*, iv., p. 238 (1911).

Three more specimens of this Bulbul were obtained at Padang Sireh, Perlis-Senggora border, in November. They agree well with the specimen mentioned by Mr. Kloss and render it more than doubtful if *P. robinsoni* can be maintained even as a sub-species distinct from *P. blanfordi*.

KENOPIA STRIATA (BLYTH).

Kenopia striata (Blyth); *Kloss, tom. cit.*, p. 232.

Two more specimens, both males, were obtained at Rawang, Selangor, in July. The species has not hitherto been recorded from the State.

CALORNIS CHALYBEA (HORSF.).

Calornis chalybea (Horsf.); *Sharpe, Cat. Birds Brit. Mus.*, xiii., p. 543 (1890).

Specimens from the outlying island of Pulau Aor, in the South China Sea, seem at first sight to be separable by their coarser more robust bills, though the other dimensions do not differ appreciably. In colour the island birds are not distinguishable from those found on the mainland. Salvadori has separated the bird from Nias under the name *C. altirostris*, mainly on account of the larger bill and darker colouration, both characters that seem very frequently developed in island races of widely distributed birds.

CHALCOSTETHA PECTORALIS (TEMME).

Chalcostetha insignis (Temm.); *Gadow, Cat. Birds Brit. Mus.*, ix., p. 12 (1884).

The Purple-breasted Sun-bird was but poorly represented in our collection by three skins from Penang. In June, 1912, however, we obtained a series from the island of Sri Buat, off the Pahang Coast, on the east side of the Peninsula. Like the majority of the local Sun-birds (excluding the Spider hunters) this species only occurs in the littoral belt and is rarely, if ever, found far inland. Formerly, according to Mr. C. B. Kloss, it was common at Tanjong Katong, in Singapore Island, but is seldom seen there now. Mr. Seimund found it common at Pulau Pintu Gedong, Klang Straits, Selangor, in September and October, 1912. It is, therefore, probably largely confined to mangroves.

PIPRISOMA EVERETTI (SHARPE).

Prionochilus everetti, *Sharpe, Ibis*, 1877, p. 16; *id. P.Z.S.* 1879, p. 343, pl. xxx, fig. 1; *Id. Cat. Birds Brit. Mus.*, x., p. 76 (1885).

I have referred to this species with some hesitation a single male specimen obtained at Rawang, Selangor, in July, 1912. It differs from the type description and the figure as cited above in being a much darker tint above, greyish not brown, and in having the sides darker grey, not nearly uniform with the middle of the belly as shown in the figure. The habitat of *P. everetti* is given as Western Borneo and the island of Labuan but in the absence of a series and direct comparison with the type the differences are not sufficient to justify me in describing the bird before me as a new species.

The present specimen was shot while feeding on a mistletoe on the boughs of a lofty tree in swampy jungle.

PARUS CINEREUS, VIEILL.

Parus cinereus; *Gadow, Cat. Birds Brit. Mus.*, viii., p. 16 (1883).

Parus atriceps, *Ogilvie Grant, Fascic. Malay Zool.*, iii., p. 77 (1905).

This tit has not hitherto been recorded from the southern part of the Malay Peninsula though it was met with by myself on the coast of Patani, and by Dr. Abbott on the coast of Trang, about 150 miles north of Penang. In September and November, 1912, Mr. Seimund, however, found it abundant among the mangroves on Pulau Pintu Gedong, at the entrance to Klang Straits, Selangor coast, together with *Zosterops aureiventer*.

LIST OF A SMALL COLLECTION OF BIRDS AND
MAMMALS FROM GUNONG KERBAU, PERAK.

BY HERBERT C. ROBINSON, C.M.Z.S., M.B.O.U.

GUNONG Kerbau, in Kinta, near the Perak-Kelantan boundary but entirely in Perak, is the second highest mountain in the Malay Peninsula, attaining a height of 7,170 feet—only 12 feet less than Gunong Tahan.

It has been ascended on numerous occasions, the first occasion being by the French traveller De Morgan,¹ and an interesting account of the mountain is given by him and more recently by Mr. Scrivenor² (who calls it Gunong Riam) and reproduces some interesting photographs of the mountain.

With the exception of a few plants secured by the native plant collector attached to the Penang Botanic Gardens, who accompanied Mr. Barnard, Deputy Conservator of Forests, Perak, on his ascent, no collections whatever have been made on the mountain.

I therefore made arrangements to despatch a party of Dyak collectors thither, and, after the usual difficulties in the matter of transport, they established themselves at a height of rather over 5,000 feet, and collected from there to the summit and down hill to about 3,000 feet.

As the flora was likely to prove of more interest than the fauna, the greater part of their time was devoted to plant collecting, and a considerable number of species secured, which will be reported on in due course by Mr. Ridley.

The collections were made between the end of February and the end of March, and a list of the mammals and birds is given below, but as will be seen the mountain has yielded little of special importance.

Thanks are due to the Forest Department for assistance rendered in the matter of obtaining coolies, who were only secured with great difficulty and proved a very poor lot when obtained. Without this help our men would not have been able to work the hill as collecting impedimenta are weighty and bulky.

¹ "Explorations dans la presqu'île Malaise." *Bulletin de la Société Normande de Géographie*, VIII, pp. 141, 211 and 281 (1886).

² "Gunong Tahan and Gunong Riam." *Journ. Straits Branch Roy. Asiat. Soc.* No. 62, pp. 8-21, Pts. I-IV (1912).

MAMMALS.

The mammals did not prove interesting and, as is always the case in districts inhabited by large numbers of Sakai, were very scarce.

The following species only were obtained :

1. MUSTELA FLAVIGULA PENINSULARIS, BONHOTE.

1 ♀.

2. SCIURUS ERYTHRÆUS RUBECULUS, MILLER.

1 ♂, 1 ♀.

Rather more ochreous on the head than is usual in specimens from the Selangor main range.

3. TAMIOPS MACCLELLANDI NOVEMLINEATUS, MILLER.

2 ♀.

Typical specimens of this race.

4. SCIURUS TENUIS TAHAN, BONHOTE.

A single female. Is rather intermediate between the lowland and the mountain race.

5. LARISCUS INSIGNIS JALORENSIS, BONHOTE.

1 ♀.

By no means typical being much more rufous beneath and on the thighs, in this respect approaching specimens from Singapore and southern Johore. Approached in this respect by a specimen from Bukit Kutu, Selangor, 3,000 feet, and possibly indicating a distinct mountain race. The area between the black back stripes is not however tinged with rufous as in the southern form above mentioned, *Lariscus insignis meridionalis*.

6. EPIMYS CREMORIVENTER, MILLER.

Two quite typical females.

7. TUPAIA FERRUGINEA, SUBSP.

A single female. Specimen approaches the more northern forms in the much less ferruginous upper surface and in the paler under surface to the tail.

BIRDS.

The birds also were of no particular interest, the avifauna being precisely similar to that of the Batang Padang mountains, some forty miles to the south, which has been very exhaustively studied.

Our collectors were therefore instructed not to make unnecessarily large collections but to specially search for any species unfamiliar to them; it may therefore be taken as reasonably certain that no species unrecorded from the Malay Peninsula has escaped their notice.

The following species were actually obtained :

1. ARBORICOLA CAMPBELLI, ROBINSON.

1 ♀.

2. SPHENOCERCUS SEIMUNDI, [ROBINSON.

A series of fine adult males of this beautiful wedge-tailed green pigeon, hitherto known from five other specimens only.

3. PYROTROGON ERYTHROCEPHALUS, GOULD.

2 ♂.

4. CHOTORHEA CHRYSOPOGON, TEMM.

1 ♂.

5. CYANOPS OORTI, MULL.

2 ♂.

6. CHRYSOPHLEGMA WRAYI, SHARPE.

1 ♂.

Not yet found off the main range of the Malay Peninsula.

7. PSARISOMUS DALHOUSIE, JAMESON.

2 ♀.

8. HEMICHELIDON FERRUGINEA, HODGS.

2 ♀.

Common and resident on most high hills of the Peninsula.

9. CYORNIS CONCRETA, S. MULL.

A fine pair of this widely spread but by no means common fly-catcher.

10. CYORNIS DIALILEMA, SALVAD.

A single female, which I have with some hesitation referred to this species which is widely spread at moderate elevations throughout the Peninsula.

11. NILTAVA SUMATRANA, SALVAD.

A single adult male identical with the bird that I described as *Cyornis malayensis*, from Batang Padang, but which I have since found to be identical with the above-named form. It comes in a group including *C. vivida* from Formosa and *C. outesi* from Tenasserim and is very doubtfully congeneric with the other species in the genus though it cannot, I think, be classed as a *Niltava*. There is also a *Cyornis sumatrensis*, Sharpe, but the question whether two specific titles such as *sumatrana* and *sumatrensis* are admissible in one genus may be left to zoological purists.

12. NILTAVA DECIPIENS, SALVAD.

1 ♂.

Widely distributed on every mountain over 3,000 feet as far south as the southern border of Selangor.

13. POLIOMYIAS LUTEOLA, PALL.

A pair.

Apparently not a resident species.

14. MUSCICAPULA MALAYANA, OGILVIE GRANT.

A single male.

15. TERPSIPHONE AFFINIS, BLYTH.

A single immature male in rufous plumage. Not usually found at high elevations.

16. PERICROCOTUS MONTANUS, SALVAD.

A single female.

One of the commonest of mountain birds.

17. HEMIXUS CINEREUS, BLYTH.

1 ♀.

18. IOLE PERACENSIS, HARTERT AND BUTLER.

One pair.

19. CRINIGER OCHRACEUS, MOORE.

1 ♂.

All very common birds.

20. TROCHALOPTERON PENINSULÆ, SHARPE.

2 ♂.

21. GAMPORHYNCHUS SATURATION, SHARPE.

Two males of this rather rare bird which is only common on the Semangko Pass, Selangor-Pahang boundary. The types were obtained in the Batang Padang mountains.

22. MELANOCICHLA LUGUBRIS, S. MULL.

5 ♂, ♀.

Common here as elsewhere on the main range at over 3,000 feet.

23. DRYOCATAPHUS TICKELLI, BLYTH.

1 ♀.

On all the hills of the main range but not in Larut.

24. TURDINULUS GRANTI, RICHMOND.

1 ♀.

A submontane bird, not as a rule attaining any considerable elevation.

25. CORYTHOCICHLA LEUCOSTICTA, SHARPE.

3 ♂.

Almost the commonest of all the hill birds.

26. ALCIPPE PERACENSIS, SHARPE.

1 ♀.

27. BRACHYPTERYX WRAYI, GRANT.

1 ♂, 1 ♀.

Not very common anywhere and generally found among the brushwood near the summits of the hills.

28. SIVA MALAYANA, HARTERT.

2 ♂, 2 ♀.

29. *SIVA SORDIDIOR*, SHARPE.

1 ♂.

Both these species are common on the main range, but the former is not found in Larut.

30. *HERPORNIS ZANTHOLEUCA*, HODGS.

1 ♀.

Of very wide altitudinal range, being found from sea-level to over 6,000 feet.

31. *MESIA ARGENTAUROS*, HODGS.

1 ♂, 1 ♀.

32. *PNOEPYGA LEPIDA*, SALVAD.

1 ♀ imm.

A very immature bird uniformly dark beneath.

33. *HYDROCICHLA RUFICAPILLA*, TEMM.

2 ♂.

Common along mountain torrents everywhere in the Peninsula.

34. *LARVIVORA CYANEA*, PALL.

1 ♂.

Probably only a seasonal visitor, though some individuals may remain throughout the year.

35. *COPSYCHUS MUSICUS*, RAFFLES.

1 ♂.

The common "Straits Robin" is of accidental occurrence away from human habitations.

36. *PHYLLERGATES CINEREICOLLIS*, SHARPE.

1 ♂.

37. *MELANOCHLORA FLAVOCRISTATA* LAFR.

2 ♂.

The Sultan Tit ranges from the lowlands up to about, 5,500 feet.

38. *BHRINGA REMIFER*, TEMM.

1 ♂.

Common on nearly all the hills.

39. *ORIOLES CONSANGUINEUS*, WARDL-RAMS.

1 ♂.

The red and black Oriole is local in its distribution but fairly common wherever found.

40. *MOTACILLA MELANOPE*, PALL.

1 ♂.

A seasonal visitor.

ON A COLLECTION OF PLANTS FROM GUNONG MENG- KUANG LEBAH, SELANGOR.

By H. N. RIDLEY, M.A., C.M.G., F.R.S.

LATE DIRECTOR OF GARDENS, STRAITS SETTLEMENTS.

[The collection reported on by Mr. Ridley was obtained in January and February, 1913, by the Dyak collectors of the Federated Malay States Museum on Gunong Mengkuang Lebah at a height between 4,800 and 5,800 feet. The mountain is a long razor backed ridge, gently sloping upwards from S.S.E. to N.N.W. on the main peninsular range dividing Selangor from Pahang, and has been visited on numerous occasions within the last few years though this is the first considerable botanical collection therefrom.

The present gathering represents the flora of the uppermost zone only but the mountain is heavily forested throughout. Up to about 2,500 feet various species of bamboo are very common and are succeeded above that level by a zone of palms, amongst which *Licuala* and a form of *Livistona* close to *L. tahanensis*, Becc, are the most characteristic. As in other hills the vegetation close to the main ridge becomes knarled and stunted and densely carpeted with wet moss. It is in this zone that the various species of *Rhododendron* are mainly found while amongst the herbaceous plants two species of *Burmanna* are the most conspicuous. A giant species of *Pandanus*, from which the mountain takes its name, is very common as is also a very slender *Calamus* affording an excellent rotan. *Kayu manis* or cinnamon, but of little commercial value, is also very abundant. The characteristic zerophytic vegetation to which Mr. Ridley alludes is only found on knolls and hillocks on the extreme summits and ridges while thirty feet down the "rain forest" zone is entered. The whole of both zerophytic and rain forest zone is very dense and tangled and only traversable with great labour except where game tracks, made by the larger Malay rhinoceros *R. sondaicus*, (which is fortunately numerous), occur. The formation is granite throughout and the summit ridges for the last two or three hundred feet consist mainly of enormous boulders piled one on each other.

The fauna, which is now well known, is that of the other mountain tops of the main range, but bears and siamang are numerous. The former are very fond of the cinnamon bark.—H. C. R.]

The collection obtained on this mountain is very representative of the general flora of the higher ranges of the Malay Peninsula. It is interesting to note that in species which have adapted themselves to these mountain tops there is a great tendency to a shortening of the branches, accompanied by a thickened and more coriaceous foliage, which also has a tendency to become more rounded in outline and blunt or even retuse at the tip. This is illustrated in this collection

by such plants as *Calophyllum rotundifolium*, *sp. nov.*, *Eugenia Wrayii*, King, and *Eugenia spissifolia*, *sp. nov.*, the leaves of all three being remarkably similar in outline and texture.

There are no less than 27 new species in this gathering including three new rhododendrons, a new oak and a remarkable species of *Ilex* most resembling a species from Kinabalu in Borneo.

LIST OF FLORA.

MAGNOLIACEÆ.

1. *ILLICIMUM CAMBODIANUM*, *Hance*.

Distrib.—Mountains of the Malay Peninsula, Cambodia.

ANONACEÆ.

2. *POLYALTHIA PULCHRA*, *King*.

Distrib.—Mountains of Perak and Ulu Pahang.

3. *GONIOTHALAMUS MALAYANUS*, *Hooker fil.*

Distrib.—Malacca and Perak, usually in the low country.

POLYGALACEÆ.

4. *POLYGALA MONTICOLA*, *Ridley*.

Distrib.—Mountains of Perak and Selangor.

GUTTIFERÆ.

CALOPHYLLUM ROTUNDIFOLIUM, *sp. nov.*

Branches dark-coloured. Leaves crowded, opposite, stiffly coriaceous, sessile, broadly elliptic (lower ones) to orbicular, apex retuse, base cordate, above prominently nerved with close horizontal parallel nerves, beneath paler and nearly smooth, 2.5–4 cm. long, 2.5–4 cm. wide. Flowers solitary or two, terminal on the branches, on peduncles 1 cm. long shorter than the leaf. Outer sepals coriaceous, orbicular, 0.8 cm. long, inner sepals oblanceolate, obtuse, 0.2 cm. long. Petals obovate rounded, with a distinct claw 1 cm. long, 0.9 across. Stamens shorter than the petals with small oblong anthers.

A most distinct and pretty species with large solitary flowers 2 cm. across and remarkable rounded leaves.

TILIACEÆ.

6. *ELÆOCARPUS GLABRESCENS*, *Masters*.

Distrib.—Penang Hill and Kedah Peak.

7. *ELÆOCARPUS ERIOBOTRYOIDES*, *sp. nov.*

Branches moderately stout. Leaves coriaceous, lanceolate, apex acuminate, base cuneate, margins shortly serrate, nerves six pairs in-arching some way from the margin, reticulations wide, nerves and reticulations less conspicuous

above and midrib depressed. Adult leaves quite glabrous, young leaves at first silvery-silky along the edge. Adults 13-14 cm. long, 3-4.5 cm. wide, petiole, 2-5.3 cm. long. Racemes axillary from just below the leaves on the old wood, numerous, 5 cm. long. Flowers secund, twelve or more on pubescent pedicels 0.8 cm. long. Buds conic, hardly acute. Sepals, five lanceolate acuminate from a broader base, pubescent 0.6 cm. long, 0.15 cm. across. Petals as long, narrow, oblong cuneate, apex fimbriate with short fine processes, base silky-hairy especially along the edge. Stamens with short filaments and much longer pubescent blunt anthers. Style longer than the perianth, silky pubescent, tip bent at an angle; ovary and disc silky.

Allied to *E. monticola*, Ridley, from Gunong Tahan.

8. *ELÆOCARPUS* (§ *ACRONODIA*) *LEPTOMISCHUS*, *sp. nov.*

Branches dark-coloured. Leaves ovate lanceolate, acuminate, blunt, base rounded, margins crenulate, coriaceous; nerves, seven pairs, reticulations fine, elevate beneath, 5.5-6.5 cm. long, 2.5 cm. wide, petiole slender, black, thickened and bent at the tip 5 to 6 cm. long. Racemes numerous among the upper leaves, 5-6 cm. long, flowers numerous, pendent, on silky pubescent pedecels, 0.5 cm. long. Buds conic, subacute, 0.2 cm. long. Sepals four lanceolate, silky outside. Petals, four, oblong cuneate, apex fimbriate with about 12 short processes, subglabrous outside, woolly at the base within. Stamens with short filaments; anthers narrow apiculate, glabrous. Ovary and disc silky hairy. Style silky pubescent.

Allies to *E. Mastersii*, King, but with rounded bases to the leaves, with distinct fine reticulations and apiculate anthers. All the specimens are in bud or in young fruit.

GERANIACEÆ.

9. *IMPATIENS ONCIDIoidES*, *Ridley*.

Distrib.—Pahang, Perak and Selangor, from about 3,000 feet upwards.

OLACINÆÆ.

10. *GOMPHANDRA LANCEOLATA*, *King*.

Both the common typical form and a variety with ovate leaves broadly rounded at the base.

Distrib.—The mountains of Malacca, Selangor, Perak and Penang: common.

ILICINÆÆ.

11. *ILEX EPIPHYTICA*, *King*.

Distrib.—Perak and Pahang mountains, from about 3,000 to 5,000 feet.

12. *ILEX MYRTILLUS*, *sp. nov.*

A shrub, much branched, with small alternate, thickly coriaceous leaves, elliptic to obovate, obtuse or retuse narrowed to the base, nerves quite invisible on both surfaces, except the midrib, channelled above and elevate beneath, 1.5 cm. long, 1 cm. wide, petiole, 0.2 cm. long. Flowers in terminal or axillary short panicles or racemes, much shorter than the leaves, pubescent, pedicels 0.1 cm. long, pubescent. Sepals, four ovate or half orbicular pubescent, obtuse. Corolla 0.3 cm. across, petals, four ovate, glabrous longer than the calyx, connate at the base. Stamens, three, adnate to the top of the tube alternate with the lobes, filaments thick, anthers subglobose, rather large. Ovary short conic, stigma minute.

This species is remarkable for the very thick small thickly coriaceous obovate leaves and small flowers. It is nearest to *Ilex vacciniifolia*, Stapf. of Kinabalu.

CELASTRINEÆ.

13. *EUONYMUS WRAYI*, *King.*

Distrib.—Perak and Pahang mountains, usually at about 5,000 feet. More rarely on limestone rocks in the low country.

LEGUMINOSÆ.

14. *BAUHINIA KINGII*, *Prain.*

Distrib.—Mountains of Perak and Selangor, from 1,000 to 4,500 feet.

ROSACEÆ.

• 15. *PYGMEUM GRIFFITHII*, *Hooker fil.*

Distrib.—Mount Ophir at about 4,000 feet.

SAXIFRAGACEÆ.

16. *POLYOSMA ILICIFOLIA*, *Blume.*

A fine series of this confirms my opinion based on specimens from the adjacent mountain, Menang Gasing, that *P. parviflora*, King, is really a very young state of this species. The flowers when fully developed are as large as those of Javanese and Australian specimens.

Distrib.—Perak and Selangor, from 4,000 feet upwards. Also Java and Australia.

17. *POLYOSMA CORIACEA*, *King*, var. *MINOR.*

Leaves more lanceolate and narrower, the flowers less silky pubescent outside, occurring with the typical form.

Distrib.—Perak and Pahang mountains.

RHIZOPHOREÆ.

18. *CARALLIA EUGENOIDEA*, *King.*

Distrib.—Mountains of Perak.

MYRTACEÆ.

19. *LEPTOSPERMUM FLAVESCENS*, var. *COMMUNE*, *Bentham*.

Distrib.—Common on all the mountains of the Malay Peninsula from about 4,000 feet upwards to 7,000 feet. Malacca, Pahang, Selangor, Perak and Kedah; also in the Malay Archipelago and in Australia.

20. *EUGENIA VALDEVENOSA*, *Duthie*.

Distrib.—Penang and Perak, from 2,500 feet upwards.

21. *EUGENIA SELANGORENSIS*, *sp. nov.*

Branches stout. Leaves thickly coriaceous, elliptic, with a short deflexed point, base cuneate, nerves numerous, fine, secondary nerves nearly as prominent, midrib elevated on the back, depressed above, 8-9 cm. long, 4-5 cm. wide, petiole thick, grooved above, 1 cm. long. Panicle shorter than the leaves, 5 cm. long with numerous thick four-angled branches, 0.3 cm. in diameter. Buds 0.6 cm. long; calyx tube campanulate, tapering to the base, smooth, 0.9 cm. long, 0.5 cm. through at the apex, lobes, four, short, ovate, obtuse. Petals small, obovate rounded, bigger than the calyx lobes.

Stamens numerous, filaments slender twice as long as the petals.

In some respects, especially in the form of the flower, this resembles *E. lepidocarpa*, Wall, but the calyx is not ribbed, the leaves are thicker and the nerves much more numerous.

22. *EUGENIA WRAYI*, *King*.

Distrib.—Perak mountains at Ulu Batang Padang, 5,000 to 5,600 feet.

The form from the highest point differs in its denser, rounder and even retuse leaves. The fruit (hitherto undescribed) is 1 cm. long globose, crowned by the short low annular calyx limb. It appears to have been somewhat pulpy.

23. *EUGENIA SPISSIFOLIA*, *sp. nov.*

A shrub with crowded coriaceous sessile leaves, elliptic to orbicular, retuse, base cordate, nerves faint on both sides, about 10 pairs, secondary nerves nearly as conspicuous, 3-4 cm. long, 2.5-4 cm. wide. Panicles terminal, shorter than the leaves, or elongating beyond them 2.5-7 cm. long with short branches. Peduncles and pedicels (0.2 cm. long) short and rather thick. Buds clavate, 0.7 cm. long when open. Calyx tube rather long, dilate upwards, lobes, four, ovate, short. Petals very small, hardly longer than the calyx, lobes white, orbicular ovate. Stamens numerous, very short 0.1 cm. long, hardly longer than the petals.

This plant is very like *E. Wrayi* in habit and form of leaves but is quite distinct in the long calyx tube, club-shaped buds, the fewer nerves to the leaf and the very short stamens.

24. *EUGENIA RHOMBOIDEA*, *sp. nov.*

Branches rather strict, dark. Leaves obovate acuminate to rhomboid or lanceolate, coriaceous, apex acuminate, obtuse, base more gradually acuminate, 3-4.5 cm. long and 1.7-1.9 cm. wide; nerves almost completely invisible on both surfaces, parallel, numerous, very fine, lower surface, finely punctate, petiole, 0.3 cm. long. Panicle short about 2 cm. long with four short branches each bearing three flowers. Peduncles rather stout, four-angled. Calyx tube elongate gradually dilating towards the tip, light brown and finely rugose when dry, 1 cm. long, 0.4 cm. wide at the tip, lobes, four, short, ovate, triangular. Petals calyptrate, orbicular, small. Stamens numerous, 0.2 cm. long.

This species resembles in appearance *E. Beddomei* of Southern India. It is, however, a typical mountain species, with small stiffly coriaceous leaves closely veined. In one gathering the specimens have obovate leaves, 4 cm. long by 2.5 cm. wide, but in most specimens the leaves vary from lanceolate to rhomboid. The calyx tube has a rough corky light brown exterior. The whole plant dries of a light greenish brown colour.

MELASTOMACEÆ.

25. *OXYSPORA HISPIDA*, *Ridley*.

Also collected here by Dennys.

26. *ANERINCLEISTUS GRANDIFLORUS*, *Ridley*.27. *SONERILA HIRSUTA*, *Ridley*.

Distrib.—Pahang and Perak mountains.

28. *SONERILA BRACHYANTHA*, *Stapf and King*.

Distrib.—Perak mountains.

29. *SONERILA RAMOSA*, *sp. nov.*

A much branched hairy shrub over a foot tall, branches four-angled covered with long bristly hairs; leaves narrow, lanceolate acuminate at both ends, sessile, margins serrate with a bristly hair on each tooth, both surfaces also bristly hairy, 5-6 cm. long, 1-1.2 cm. wide, slightly oblique. Flowers solitary, axillary, sessile or nearly so (fruit shortly stalked); calyx tube cylindric, slightly dilated above, 0.5 cm. long, lobes, six, lanceolate acuminate, all covered with red hairs. Petals, three, obovate, rather long clawed, apex rounded, white, 1.5 cm. long, 0.9 cm. wide. Stamens, three, long, curved, base orange, bilobed, lobes somewhat divaricate, apex slender, acuminate, white, 0.6 cm. long, filaments slender; style rather shorter than the stamens.

Capsule 0.5 cm. long, turbinate, cover with few tubercles bearing hairs (hairs deciduous); sepals, six, as long or shorter than the oblong rounded valves.

Most nearly allied to *S. fruticosa* of Gunong Tahan.

30. *MEDINILLA PERAKENSIS*, *Stapp.*

Distrib.—Perak mountains.

31. *MEDINILLA CLARKEI*, *King.*

This form differs from the typical plant in its larger, thinner lanceolate pointed leaves. In most other forms the leaves are obovate, rounded; it appears, however, to vary considerably in the form of the leaves according to local conditions. It occurs on many of the mountains of the Peninsula.

32. *PHYLLAGATHIS TUBERCULATA*, *King.*

Distrib.—Perak, on Bujang Malacca.

This splendid plant is very unlike any others of the species referred to this genus, from which it should probably be removed. King describes the stem as short. It, however, attains the height of six feet.

BEGONIACEÆ.

33. *BEGONIA MONTICOLA*, *sp. nov.*

A glabrous herb with a creeping rhizome. Leaves herbaceous, ovate, inæquilateral, apex acuminate denticulate, the base with two shortly unequal rounded lobes, the larger 1 cm. longer than the shorter one; margins obscurely denticulate, distinctly so on the apical point; nerves, 10, five rising from the base, the others from the midrib; 10 cm. long, 6 cm. wide, the point 1 cm. long; petiole 14 cm. or more long. Scape, red, fleshy, 16–28 cm. long. Flowers few in the cyme. Male flowers, four petalled, two petals oblong obovate, two inner ones smaller but somewhat similar, anthers very shortly apiculate. Female flowers of four rounded, obovate, nearly equal petals, white; the whole flower, 3 cm. across. Capsule, 3-ringed, one wing broad, rounded 1.5 cm. long and as broad at the base, the others smaller bluntly triangular, 1 cm. long.

This species is allied most closely to *B. paupercula*, King, but differs in the presence of the two smaller petals, absent in that species in the male, and the nearly equal rounded petals of the female flower. The fruit closely resembles that of *B. Klossii*, Ridley, and so does the curiously dentate tip of the leaf, but the unequal leaf base separates it from that species.

ARALIACEÆ.

- 34.
- ARTHROPHYLLUM PINNATUM*
- ,
- Clarke*
- .

Distrib.—Mountains of Malacca, Perak and Penang.

- 35.
- HEPTAPLEURUM AFFINE*
- ,
- King*
- .

Distrib.—Mountains of Perak, from 3,000 to 5,000 feet.

- 36.
- HEPTAPLEURUM CEPHALOTES*
- ,
- Clarke*
- .

Distrib.—Singapore, Malacca, Perak and Penang.

GAMOPETALÆ

CORNACEÆ.

- 37.
- VIBURNUM SAMBUCINUM*
- ,
- Reinw.*

Distrib.—Singapore, Malacca, Perak, Pahang and Penang.
Also Sumatra, Java and Borneo, from 3,000 to 5,000 feet.

RUBIACEÆ.

- 38.
- ARGOSTEMMA HIRTUM*
- ,
- Ridley*
- .

Distrib.—Mountains of Malacca, Selangor, Pahang and Perak,

- 39.
- ARGOSTEMMA YAPPII*
- ,
- King*
- .

Distrib.—Mountains of Perak and Selangor.

- 40.
- ARGOSTEMMA DEBILE*
- ,
- sp. nov.*

Stem long, 19 cm. rooting along the ground and ascending, succulent glabrous. Leaves remote, few, in unequal pairs, the larger one lanceolate acuminate, fleshy herbaceous, shortly narrowed to the base, dark green above, pale beneath, nerves, five pairs, very fine and hardly visible, 5.5-6.5 cm. long, 2-2.5 cm. broad; smaller leaf, ovate, sessile, obtuse, 3 cm. long. Stipules lanceolate, acute 0.2-0.3 cm. long. Flowers, one to three, umbellate on a fleshy peduncle, 3 cm. long with pairs (one or two) of stipuliform bracts; pedicels 1 cm. long. Calyx rotate, lobes ovate sub-acute, 0.2 cm. long. Corolla, lobes, four, narrow lanceolate, linear acuminate, 1.1 cm. long, 0.3 cm. wide at the base. Stamens, anthers forming a narrow cone, 0.6 cm. long. Style longer, stigma clubbed.

Most nearly allied to *A. Hookeri*, King, but altogether larger.

- 41.
- TIMONIUS EREOPHILUS*
- ,
- Ridley*
- .

Distrib.—Mountains of Malacca and Pahang.

- 42.
- IXORA SALICIFOLIA*
- ,
- Blume*
- .

A new record for the Malay Peninsula. A native of Borneo and Java. The corolla lobes in the single specimen are blunter than in the ordinary form.

43. *IXORA PENDULA*, var.

With narrow lanceolate leaves and larger flowers than usual.
The species is common over the whole Peninsula from sea-level to 5,000 feet.

44. *IXORA GRANDIFOLIA* var. *ARBORESCENS*, *Hooker fil.*

Distrib.—Johore, Malacca and Perak.

45. *CEPHELI* SUBCORIACEA, *sp. nov.*

Stem slender, woody. Leaves thinly coriaceous, broadly lanceolate to obovate acuminate acute, base cuneate; nerves, six to eight pairs, elevate beneath, 11 cm. long, 3.5-3.7 cm. wide, drying brown above, paler beneath. Petiole 0.3 cm. long, thick. Stipules, 2 cm. long, base tubular, embracing the stem for one-third of their length, limb lanceolate acuminate, brown, papery, upper ones more ovate, leaving a prominent ring when fallen. Flowers five or six in a sessile head 1.5 cm. across, pedicels short, thick, with the calyx tube, 0.4 cm. long. Calyx lanceolate acuminate acute 0.1 cm. long. Corolla tube, 0.6 cm. long dilate at the base and above and narrowed in the middle, lobes short, lanceolate obtuse 0.2 cm. long; tube within white, hairy in the mouth. Stamens adnate to the tube in the mouth, filaments short, anthers ellipsoid, bases rounded, rather large.

Very distinct from any of our other species in the foliage.

46. *LASIANTHUS NERVOSUS*, *King.*

Distrib.—Mountains of Perak.

47. *PSYCHOTRIA MULTICAPITATA*, *King (?)*.

Flowers too young to be quite certain of the identification.

48. *PSYCHOTRIA CONDENSEA*, *King and Gamble.*

Distrib.—Mountains of Perak and Pahang, from 3,000 to 5,000 feet.

49. *PSYCHOTRIA SARMENTOSA*, *Blume.*

A glabrous form.

Distrib.—The whole Peninsula, India and the Malay Archipelago.

VACCINIACEÆ.

50. *VACCINIUM DECORUM*, *sp. nov.*

A shrub with coriaceous leaves, obovate rounded at the tip, narrowed to the petiole, edges recurved when dry, dark-brown above, yellowish brown, gland-dotted beneath (when dry). Nerves, four pairs ascending from the midrib, not from the base, midrib, thick tapering gradually to the apex, 4-7 cm. long, 2.3-4.5 cm. wide, petiole 1 cm. long, stout. Racemes axillary, pendent, 9 cm. long, numerous. Flowers secund, deflexed on slender pedicels 0.6 cm. long. Calyx

lobes triangular, often (but not always) ciliate along the margins, 0.1 cm. long. Corolla tube broadly cylindric slightly dilated in the middle, lobes short, acute, minutely pustular on the edges, scarcely 0.1 cm. long. Whole corolla 0.5 cm. long, 0.4 cm. through, glabrous. Stamens, eight, shorter than the tube, filaments broadly linear as long as the anther cells, densely silky hairy. Anther cells oblong, terminal processes as long, linear broad, parallel, glabrous, no basal appendages. Style as long as the tube, thick, glabrous, stigma hardly lobed. Fruit (not quite ripe) spreading, on pedicels 1 cm. long, semiglobose, glabrous, pustular, crowned with the erect calyx lobes and the longer pulvinate disc, depressed in the centre 0.5 cm. long, 5-celled with numerous angled seeds.

This handsome and floriferous species is allied to the imperfectly known *V. viscifolium*, King and Gamble, from which it differs in the shape and venation of its leaves and the five-celled fruit. It is allied to *V. Teysmanni*, Miquel, but has smaller leaves and different flowers.

51. *VACCINIUM ARDISIODES*, *sp. nov.*

A shrub with slender dark-coloured branches and coriaceous glabrous elliptic lanceolate leaves shortly acuminate at the tip, narrowed at the base, above smooth, dark brown when dry, beneath cinnamon brown, gland-dotted. Nerves, two pairs, rising from near the base of the midrib and running upwards and one pair rising from the upper part of the midrib but more spreading, all slender, midrib elevate on the back depressed above, 3 cm. long, 1.3 cm. wide, petiole 0.2 cm. Racemes shorter than the leaves, 2.5 cm. long. Flowers secund on pubescent pedicels 0.5 cm. long. Calyx pubescent, tube cup-shaped, lobes as long as the tube. Corolla glabrous, 0.4 cm. long, ovoid with small acute lobes. Stamens, 10, filaments hairy, flat, base broadly linear, narrowed upwards, twice as long as the small ellipsoid anthers, processes terminal, two, small, globose, yellow, no basal processes. Style thick, twice as long as the stamens, stigma rounded, disc white, hairy.

Allied to *V. Kunstleri*, King and Gamble, but the sepals are larger, the corolla lobes acute, the anthers smaller with different processes and the flowers and leaves smaller.

ERICACEÆ.

52. *RHODODENDRON CORUSCUM*, *sp. nov.*

Branches stout, woody. Leaves coriaceous, oblanceolate or oblong lanceolate apex obtuse or shortly acute, base narrowed obtuse, midrib stout, narrowing to the apex, elevate beneath, depressed above. Nerves 12 pairs, slender,

slightly ascending, reticulations small, fine and conspicuous, glabrous, with no scales or gland dots, 12-13 cm. long, 4-4.5 cm. wide, petiole, 2.5 cm. long, rugose. Flowers in a head of 10 to 12, bracts coriaceous, lowest ones lanceolate, 3 cm. long, upper ones 1 cm. obovate, rounded, often split, all silvery pubescent, lowest one silky hairy. Calyx flat with five short teeth, hairy. Corolla broadly bell-shaped, tube short, widely dilate, 4 cm. long, limb 5 cm. across, lobes broad, bluntly rounded, ovate, 2 cm. wide across the top. Stamens not exsert, shorter than the style, filaments fairly stout, glabrous. Anthers oblong, truncate, curved. Style stout, longer. Stigma broad, pistil cylindric, short stout glabrous.

The flowers appear to have been white with perhaps some dark colouring at the base of the tube. The young bud leaves are scaly but otherwise there are no scales on the foliage. Of our species the plant appears to be nearest to *R. Wrayi*, King and Gamble, but has much thinner leaves, with longer petioles. The silky bracts of the inflorescence are very characteristic.

[This handsome *Rhododendron* is the dominant plant in the rain forest just below the comb of the ridges. It is a small lanky tree growing to about 25 feet whereas *R. Wrayi*, which is found on the hills above the Semangko Pass, is a short compact shrub growing on the actual summits in exposed situations. The flowers of the present species are somewhat translucent white, the tube at the base speckled with dark purplish—H.C.R.]

53. *RHODODENDRON JAVANICUM*, *Bennett*.

Distrib.—Perak, Kedah, Sumatra, Java and Celebes.

54. *RHODODENDRON CALOCODON*, *sp. nov.*

A small shrub, probably epiphytic, with dusky rough branches. Leaves in whorls of six obovate to rounded, base shortly narrowed and obtuse, coriaceous, above smooth green, beneath yellowish, closely gland-dotted; nerves three pairs, almost always invisible. Midrib beneath thick, narrowing rapidly to the apex, above faintly depressed, 3 cm. long, 2 cm. wide or smaller, petiole very short 0.1 cm. Flowers solitary, terminal, on a pubescent pedicel 1 cm. long. Bracts in bud, numerous ovate obtuse glabrous, basals shortly mucronate, reddish. Calyx cup-shaped with short indistinct points, pubescent, 0.1 cm. long. Corolla cylindric campanulate 2 cm. long, mouth 1.5 cm. wide, dark red with white hairs outside and inside, lobes short oblong, apex broad retuse, 0.4 cm. long and 0.5 cm. wide. Stamens not exsert, shorter than the corolla, 10; anthers

oblong, truncate, filaments white-hairy. Style glabrous, much shorter than the stamens, thick; stigma capitate, large; ovary silky.

This pretty shrub belongs to the set of tubular-flowered Rhododendrons with small lobes to the corolla which hardly spread and thus is allied to *Rl. elegans* of Gunong Tahan and *Rh. spathulatum* of Gunong Kerbau but is larger than either.

55. RHODODENDRON ORION, *sp. nov.*

A shrub with wrinkled reddish brown branches. Leaves coriaceous in whorls of six or seven obovate, the base narrowed to the petiole, apex rounded, retuse, margin recurved, midrib, thick, elevated, sparingly scaly, depressed above; nerves four pairs indistinct, slightly elevate beneath, depressed above, 4.5 cm. long, 2.3 cm. wide, petiole 0.5 cm. long. Flowers numerous, terminal, six or more in the umbel, peduncle very short, covered with lanceolate acute glabrous bracts, pedicels slender, 2 cm. long scaly. Calyx saucer-shaped very small, margin obscurely lobed. Corolla short tubed, infundibuliform, tube widening upwards, scaly, lobes oblong ovate, obtuse, spreading scaly, 1 cm. long and 0.6 cm. wide; whole corolla, 2.4 cm. long, apparently yellow. Stamens exsert as long as the petals 2.4 cm. long, filaments slender, glabrous; anthers small 0.1 cm. long, oblong truncate. Style stout, glabrous, stigma large, capitate, ovary glabrous, scurfy. Capsule subfusiform, not twisted, 5-valved 5-ribbed scurfy-scaly, 1.3 cm. long.

Allied to *Rh. Scortechinii*, King and Gamble, but with less prominent nerves and longer stamens.

[On previous visits to the mountain I have met with this species as a small shrub growing in shady gullies; flowers pale yellow with an apricot tinge—H.C.R.]

56. RHODODENDRON ROBINSONI, *Ridley*.

A small specimen appears to be this plant.

Distrib.—Pahang mountains.

57. RHODODENDRON MALAYANUM, *Jack*.

Distrib.—Common on all the mountain ranges of the Malay Peninsula from 3,000 to 5,000 feet and also in Sumatra and Java.

58. PERNETTYOPSIS MALAYANA, *King and Gamble*.

Distrib.—Perak mountains to 6,500 feet.

59. DIPLYCOSIA ERYTHRINA, *King and Gamble*.

Specimens in fruit.

Distrib.—Perak, Java and Sumatra.

MYRSINACEÆ.

60. *MYRSINE PERAKENSIS*, *King and Gamble*.
Distrib.—Mountains of Perak and Pahang.
61. *EMBELIA CORIACEA*, *Wall.*
Distrib.—The whole of the Peninsula in the low country and mountains and also Java, Sumatra and Borneo.
62. *EMBELIA PERGAMACEA*, *A.D.C.*
Distrib.—Perak mountains, Java and Borneo.
63. *EMBELIA ANGULOSA*, *King and Gamble*.
Distrib.—Perak at Ulu Batang Padang; and Borneo, Kina-
 balu, 7,600 to 8,800 feet.
64. *EMBELIA MYRTILLUS*, *Kurz.*
Distrib.—Mountains of Malacca, Perak and Pahang.
65. *ARDISIA MONTANA*, *King and Gamble*.
Distrib.—Mountains of Perak and Selangor, 3,000 to 7,000 feet.
66. *ARDISIA ANDAMANICA*, *Kurz.*
Distrib.—Johore, Malacca, Perak. Also Andamans and Mergui.

STYRACEÆ.

67. *SYMPLOCOS SPICATA*, *Roxb.* var.
 This has lanceolate long acuminate leaves with nearly entire margins and most of the inflorescences are unbranched short racemes. It may prove to be specifically distinct.
68. *SYMPLOCOS OPHIRENSIS*, *Clarke.*
Distrib.—Malacca and Perak.

OLEACEÆ.

69. *LINOCIERA LANCIFOLIA*, *Ridley.*
Distrib.—Pahang mountains.

APOCYNACEÆ.

70. *ALYXIA FORBESII*, *King and Gamble.*
Distrib.—Mountains of Pahang, Perak and Penang; also in Sumatra and Java, from 2,500 to 5,000 feet.
71. *ALYXIA OLEIFOLIA*, *King and Gamble.*
Distrib.—Mountains of Perak.
72. *RANWOLFIA PERAKENSIS*, *King and Gamble.*
Distrib.—Pahang, Perak and Kedah, from sea-level upwards.
73. *ERVATAMIA CORIACEA*, *Ridley.*
Distrib.—Sempan Mines, Selangor, 4,000 feet.

ASCLEPIADACEÆ.

74. *MARSDENIA STELLARIS*, *sp. nov.*
 A climber with a rather slender pubescent stem. Leaves in distinct pairs ovate lanceolate acuminate to lanceolate acuminate, apex acute, base rounded, subcordate, herbaceous, above dark green, beneath pale, petiole and midrib on both

surfaces shortly red hairy, the rest of the leaf sprinkled with short hairs; nerves almost invisible above, five pairs, in-arching 0.5 cm. from the edge, 5.5 cm. to 9.5 cm. long, 1.5-3.5 cm. wide, petiole, 2 cm. long. Peduncle axillary, 1 cm. long pubescent bearing three flowers on pubescent pedicles 1 cm. long. Calyx small, pubescent, lobes five, short ovate. Corolla rotate, tube very short, glabrous, lobes lanceolate acute 1.5 cm. across. Corona of five subcoriaceous yellow shining scales, attached to the staminal tube spreading, stellately rounded with acute tips, 0.2 cm. long. Stamens, filaments connate in a distinct tube at the base over 0.1 cm. long. Anther-appendages oblong ovate, obtuse, inflexed. Pollen oblong ovoid erect sessile on the carrier, which is nearly as long. Stigma large, rounded conic.

A single specimen.

The flowers appear to have been violet. The plant belongs to the section *Dregea* but has much larger flowers than any species from this region. I am indebted to Mr. N. E. Brown for help in working out this remarkable plant.

75. *DISCHIDIA CORDIFOLIA*, King and Gamble.

Distrib.—Perak mountains.

76. *DISCHIDIA PARVIFOLIA*, *sp. nov.*

Stem very slender. Leaves ovate acute with a distinct small cusp, base rounded, glabrous, fleshy. Nerves two pairs rising from the base, 1.2 cm. long, 1 cm. wide, petiole 0.2 cm. long. Peduncles, solitary, axillary, 0.1 cm. long or raceme nearly sessile, racemes 0.1-0.22 long, short and thick. Bracts minute, acute. Pedicels slender deflexed, 0.2 cm. long. Calyx lobes thin, ovate obtuse, corolla campanulate 0.3 cm. long, white, with five thickened acute triangular lobes, deep pink, all entirely glabrous. Corona none. Staminal column reaching to the throat, filaments straight, broad linear oblong; appendages thin, rounded oblong; pollinia oblong obtuse, or thin, flat, caudicles cuneate at the base, above dilate triangular, retuse, with two unequal points. Carrier very small, linear oblong, ovary conic cylindric. Follicle narrow lanceolate acuminate light brown, 4 cm. long, 0.2 cm. thick at the base. Seed 0.4 cm. long, oblong, brown, hairs from apex numerous, very fine, white, 1 cm. long.

The leaves are very small though bigger than those of *D. nummularia*, but much less fleshy. I can see no corona at all in the flower unless some obscure keels on the back of the stamens represent it. It much resembles a plant, of which, however, I have seen no flowers, collected by Beccari on Mt. Singalang, Sumatra.

LOGANIACEÆ.

77. *FAGRÆA GARDENIOIDES*, *sp. nov.*

A shrub with stout branches. Leaves fleshy coriaceous, obovate or oblanceolate, apex rounded, base narrowed acuminate, nerves seldom visible, three pairs only faintly marked on the upper surface, invisible beneath, 12-14 cm. long, 4.8-7 cm. wide, petiole stout, 1 cm. long with square truncate auricles at the base, 0.8 cm. long, 0.4 cm. wide. Flowers three terminal on thick pedicels 2 cm. long. Bracts at base of calyx obtuse ovate, 0.6 cm. long and as wide. Calyx 2.8 cm. long, sepals oblong oblanceolate, apices rounded 0.7 cm. wide. Corolla tube, straight, cylindric, 5 cm. long, 0.6 cm. in diameter, limb salver shaped, 7 cm. across, lobes oblong rounded, 3.5 cm. long, 1.7 cm. across. Stamens shorter than the corolla, filaments moderately thick, anthers 0.9 cm. long. Fruit ovoid, shortly beaked with the base of the style, 5 cm. long. At 5,000 to 5,600 feet.

Allied to *Fagræa carnosa*, Blume, differing in the shorter, thicker corolla tube and larger limb and in the auricled petioles.

78. *GÆRTNERA KOENIGII*, var. *OXYPHYLLA*.

Distrib.—Mountains of Perak.

ACANTHACEÆ.

79. *FILETIS GLABRA*, *sp. nov.*

Glabrous. Leaves opposite, lanceolate acuminate, apex acute, base cuneate obtuse slightly inæquilateral, nerves seven pairs, nervules and reticulations visible, 13 to 15 cm. long, 5.5 cm. wide, petiole 1 cm. long. Inflorescence simply racemed or branched 15 cm. long, branches in fruit, 5 cm. long. Flowers few, scattered, nearly or quite sessile. Bracts narrow, lanceolate linear. Sepals lanceolate acuminate free to the base, pubescent, 0.4 cm. long. Corolla pubescent outside, lower lip very hairy, 1 cm. long. Stamens four, unequal glabrous; anthers rather large, cells one above the other. Ovary cylindric conic, style glabrous. Stigma very small, capsule 4-seeded, stalk (empty portion) longer than the seed bearing portion. Seed glabrous, verrucose elliptic.

Allied to *F. paniculata*, Clarke, but glabrous except for the slight pubescence of the flower. Like most of the species the texture of the leaves seems to have been somewhat fleshy and the whole plant dries black.

80. *JUSTICIA VEGETA*, *sp. nov.*

A tall stout glabrous plant. Leaves herbaceous lanceolate acuminate at both ends, apex acute, midrib broad at base, nerves 12 pairs parallel, curved upwards and in-arching near the margin, 18 cm. long, 6.5 cm. wide, petiole 2-4 cm.

all drying green, paler beneath. Racemes axillary, two to each node, 4 cm. long on peduncles 1 cm. long. Bracts green, oblong oblanceolate, tips rounded, midrib conspicuous 2 cm. long, 0.6 cm. across. Flowers solitary in the bracts. Calyx lobes thin, lanceolate, 0.4 cm. long, green. Corolla yellow with purple stripes 1.5 cm. long, upper lobe narrow subacute, lower one hairy, sparingly on the disc. Capsule 4-seeded hardly clubbed, nearly straight, shortly abruptly cuspidate, 1.2 cm. long. Seeds ovate acuminate brown, verrucose, 0.3 cm. long.

Allied to *J. selangorica* but the bract are not obovate as in that species.

GESNERACEÆ.

81. *AESCHYNANTHUS LONGICALYX*, var. *SUPERBA*.

Calyx dilated upwards 6.5 cm. ($2\frac{1}{2}$ inches) long, the lobes 0.8 cm. across at the base 3 cm. ($1\frac{1}{4}$ inches) long. Corolla 9 cm. ($3\frac{1}{2}$ inches) long. In the original description the flowers were much smaller, the calyx 1.25 inch long, the lobes being half an inch in length, the corolla 3 inches long. The calyx in this variety is nearly as long as the corolla tube, it is dilated widely upwards from the base, the lobes are rather ensiform than lanceolate. The style is shorter than the calyx with a large rhomboid stigma. The leaves vary from lanceolate acuminate to elliptic obtuse or ovate with a rounded base; there are four pairs of very faint nerves.

The original plant was found at the Semangko Pass and it was also collected by Scortechini and Wray on Gunong Batu Puteh in South Perak. Though the type form has considerably smaller flowers, with the calyx shorter in proportion to the corolla, I do not think it advisable to separate this splendid form specifically.

82. *DIDYMOCARPUS ALBINA*, *Ridley*.

Distrib.—Perak (Gunong Batu Puteh and Telom).

83. *ORCHADOCARPA LILACINA*, *Ridley*.

The lower lip is 2 cm. long and 1.7 cm. wide, the median lobe being 0.6 cm. long.

Distrib.—Gunong Batu Puteh, Perak.

APETALÆ.

84. *NEPENTHES SANGUINEA*, *Masters*.

Distrib.—High mountains of Malacca and Perak.

85. *NEPENTHES AMPULLARIA*, var.

There are no pitchers with the specimens of inflorescence but these seem to be only referable to this lowland species. They differ somewhat, however, in the laxer and less hairy panicle and longer linear bracts. I have never seen it from above 1,000 feet before.

PIPERACEÆ.

- 86.
- PIPER PENANGENSIS*
- ,
- A.D.C.*

Distrib.—Penang.

LAURINEÆ.

- 87.
- MACHILUS SCORTECHINII*
- ,
- Gamble*
- (?).

Flowers too young to make certain of the identification but it resembles this species otherwise.

Distrib.—Perak mountains.

- 88.
- PHŒBE DECLINATA*
- ,
- Nees*
- .

Distrib.—Singapore, North to Penang, from sea-level to 5,000 feet. Also in Sumatra and Java.

- 89.
- ACTINODAPHNE CONCINNA*
- ,
- sp. nov.*

Leaves in distant whorls of 4 to 5 at the end of the branches, thinly coriaceous, glabrous, lanceolate acuminate; nerves eight pairs slender, elevate, nervules subparallel, conspicuous beneath, above depressed and less conspicuous, leaf when dry grey above, paler beneath, 14 cm. long, 4 cm. wide, petiole 1 cm. long. Inflorescence capitate, subsessile, terminal or axillary below the leaves, 1 to 3 capitula together, 1 cm. long. In bud covered by ovate coppery pubescent obtuse bracts, 0.4 cm. or less long. Male flowers 0.5 cm. long, 0.7 cm. across, pedicel and tube short hairy. Perianth lobes, six, oblong obtuse, the outer three hooded, the inner three flat, all hairy outside. Stamens, nine, filaments slender, hairy. Anthers glabrous, oblong, 4-celled, inner three shorter than the perianth, each with a pair of glabrous, shortly stalked ovoid obtuse glands at the base. Pistillode ovary hairy, style glabrous. Stigma conoid, pustular. Female flowers and fruit not seen.

Allied to *A. pruinosa*, *Nees*, a lowland tree differing in its hardly glaucous leaves, oblong not ovate perianth lobes conoid stigma and other points.

- 90.
- LINDERA RUFA*
- ,
- Gamble*
- .

Distrib.—Mountains of Selangor, Perak, Borneo and Sumatra, from 4,000 to 7,000 feet.

- 91.
- LINDERA CÆSIA*
- ,
- Bærl.*

Distrib.—Perak and Selangor mountains and Java.

- 92.
- LINDERA*
- ,
- sp.*

Distrib.—Gunong Tahan, Pahang.

- 93.
- LINDERA SELANGORENSIS*
- ,
- sp. nov.*

Tree about 30 feet tall, branches pale when dry. Leaves alternate, distant, thin-textured, glabrous (except when young when they are silky pubescent) dark green above, glaucescent beneath, ovate acuminate, acutecuspidate;

nerves, six pairs, elevate beneath, anastomosing within the margin, depressed on the upper surface, nervules conspicuous, 6-18 cm. long, 4-2 cm. wide, petiole 1.5 cm. long. Racemes axillary, 0.5 cm. long, with very small rounded persistent bracts, peduncles 1 cm. long. Buds globose, 0.2 cm. long. Bracts rounded, semicircular. Flowers, six or more in a capitulum on hairy pedicels. Male flowers, perianth lobes, six, glabrous except for a few hairs on the base outside, oblong obovate, gland-dotted on both sides, apex rounded. Stamens nine, six paddle-shaped with flat linear filaments and broader anthers, the two cells distant and below the apex of the filament; inner three very small with two large oblong obtuse fleshy glands at the base. Female flowers and fruit not seen.

Also collected by myself at the Sempan Mines, Selangor, 4,000 feet. This is undoubtedly closely allied to *L. malaccensis*, Hooker fil., a common lowland tree from Singapore, northwards to Perak, but it differs in its thinner leaves, glaucous beneath, oblong rounded petals and longer racemes. *L. malaccensis* seems confined to edges of woods in the low country and I have never seen it in the hills.

The specimens with larger and thinner leaves referred to by Gamble in the "Materials for a Flora of the Malay Peninsula," Nos. 3,373 and 4,704, and from the Dalvey Road, Singapore, are merely from younger trees or younger branches of older trees as the character of the foliage differs somewhat in the same tree.

THYMELEACEÆ.

94. WIKSTREMIA CANDOLLEANA, *Meissner*.

Distrib.—Mountains of Pahang, Perak and Kedah. Also in Java.

SANTALACEÆ.

95. HENSLOWIA PLURINERVIS, *Bærl*.

Distrib.—Perak and Sumatra.

LORANTHACEÆ.

96. LORANTHUS PENTANDRUS, *Linn*.

Distrib.—The whole Malay Peninsula and Archipelago.

97. LORANTHUS LOBBII, *Hooker fil*.

Distrib.—In most mountain regions of the Peninsula.

98. LORANTHUS CRASSIPETALUS, *King*.

Distrib.—Perak.

99. ELYSTRANTHE FORMOSA, *Blume*.

Distrib.—Not rare in the Malay Peninsula. Also in Java.

EUPHORBIACEÆ.

100. *ANTIDESMA FALLAX*, *Muell. Arg.*
Distrib.—Singapore, Johore and Perak
101. *DAPHNIPHYLLUM SCORTECHINII*, *King.*
 Male flowers.
Distrib.—Mountains of Perak.

CUPULIFERÆ.

102. *QUERCUS RASSA*, *Blume.*
Distrib.—Mountains of Malacca, Pahang, Selangor, Perak and Penang, from 2,000 to 5,000 feet.
103. *QUERCUS ROBINSONII*, *sp. nov.*

Branches stout dark coloured. Leaves coriaceous above brown when dry, beneath silvery, except the brown nerves, lanceolate acuminate, apex acute, base narrowed cuneate; nerves 11 pairs, elevate beneath, nervules transverse, parallel, 15 cm. long, 5 cm. wide. Spikes erect racemed, numerous terminal 8 cm. long on branches 12 cm. long, base (0.3 cm.) nude; rachis scurfy. Male flowers sessile, perianth lobes, six, short dentiform acute pubescent. Stamens, 12, anthers ellipsoid. Pistillode pulvinate silky. Bracts very small. Female flowers on separate spikes; styles, short, three. Fruit when young with the cupule covering the glans, and covered with short appressed triangular acute processes; adult, cupule thin, free from the glans except at the base and covering it all but the tip, splitting at the top into five irregular lobes, pubescent, faintly vertically ribbed but with no rings or processes, 1.5 cm. long, glans a little longer, ovoid, tapering at the tip, silky with the three persistent stigmas on a short style.

This seems to be allied to *Q. Blumeanum*, Korth. Differing in the silvery backs of the leaves and the absence of any belts or processes on the cupule.

MONOCOTYLEDONES.

ORCHIDÆÆ.

104. *LIPARIS DISTICHA*, *Lindley.*
Distrib.—Common in most parts of the Peninsula.
105. *PLATYCLINIS GRACILIS*, *Hooker fil.*
Distrib.—Perak and Pahang mountains.
106. *DENDROBIUM LONGIPES*, *Hooker fil.*
Distrib.—Mountains of Perak and Selangor.
107. *DENDROBIUM CORNUTUM*, *Hooker fil.*
Distrib.—Perak and Pahang mountains.

108. *DENDROBIUM ROSEATUM*, *Ridley*.*Distrib.*—Larut Hills, Perak.109. *BULBOPHYLLUM GALBINUM*, *Ridley*.*Distrib.*—Perak, Selangor and Pahang mountains.110. *BULBOPHYLLUM* (§ *MONANTHA PARVA*) *ARANIFERUM*, *sp. nov.*

Rhizome long, creeping, with abundant fairly thick roots, almost entirely covered above with adnate pseudobulbs. Pseudobulbs oblong, horizontally appressed to the slender rhizome, the short apices only free and upcurved, 1 cm. long, 0.3 cm. thick (when dry). Leaf elliptic lanceolate, apex shortly acute, base narrowed to the petiole, 5 cm. long (including the petiole) 0.8 cm. wide. Scape, rising at the base of the pseudobulb slender, one-flowered 5 cm. long with a lanceolate acuminate persistent sheathing bract 0.5 cm. long. Pedicel and ovary 2 cm. long. Sepals subequal, linear acuminate caudate, 4-nerved, the two central nerves thicker than the two outer ones, 3.2 cm. long by 0.5 cm. wide at the base. Petals linear obtuse 0.5 cm. long, all apparently whitish. Lip tongue-shaped acuminate, tip blunt, orange coloured, base cordate with sides thin rounded, apex fleshy grooved down the centre, 0.6 cm. long. Column short with subulate stelidia, foot narrow at first horizontal then rather abruptly up-curved. Anther rather large with a short distinct filament, pollinia oval elliptic.

I have only seen one flower.

This is undoubtedly allied to *B. striatellum*, *Ridley*, a native of the mangrove swamps in Singapore. It resembles *B. montense*, *Ridley*, and *B. catenarium* in the peculiar arrangement and form of the pseudobulbs. The long narrow caudate sepals are peculiar in this section.

111. *BULBOPHYLLUM CAPITATUM*, *Lindley*.

Apparently abundant. Common on all our mountain ranges from 2,000 to 6,000 feet. Also occurring in Borneo and Java.

112. *BULBOPHYLLUM SELANGORENSE*, *sp. nov.*

Rhizome long, branched, stout, woody over 0.5 cm. in diameter, densely covered with roots, pseudobulbs absent. Leaf oblanceolate coriaceous, apex blunt, base long, narrowed to the petiole, 18 cm. long, 4 cm. wide, petiole 8 cm. long. Scape about 30 cm. long, the basal half nude except for two or three sheathing bracts, the uppermost one foliaceous with a lanceolate acute limb, 5 cm. long. Raceme 15 cm. long, flowers rather scattered. Bracts lanceolate, 0.3 cm. long, shorter than the pedicel. Sepals lanceolate ovate acute, 0.3 cm. long, the lower pair connate at the base forming a rounded gibbous sac. Petals nearly as long, linear oblong

obtuse. Lip rather thin, the base broad with rounded elevated side lobes, apex acuminate, more fleshy, three raised veins run on the disc between the lobes from a horse-shoe-shaped callus at the base. Column short, steldia subulate, foot adnate to sepals, apex only shortly free.

This is allied to *B. montigenum*, Ridley, and *B. oblanceolatum*, King, of the Pahang and Perak hills, differing in the shorter lanceolate ovate sepals and the large foliaceous bract on the scape.

113. *DENDROCHILUM ANGUSTIFOLIUM*, *Ridley*.

In fruit only.

Distrib.—Mountains of Pahang and Selangor.

114. *ERIA CRASSIPES*, *Ridley*.

Distrib.—Pahang (Gunong Tahan).

115. *ERIA (DILOCHTIPSIS) SCORTECHINII*, *Hooker fil.*

Distrib.—Mountains of Selangor, Pahang and Perak.

116. *ERIA ELATA*, *Hooker fil.*

Only previously known from Perak, collected by Scortechini without locality.

117. *ERIA (TRICHOTOSIA) PYRRHOTRICA*, *sp. nov.*

A tall stout plant with the appearance of *E. vestita*, Lindley. Stems, 1 cm. in diameter densely red-hairy. Leaves with red-hairy sheaths, 2 cm. long, lamina lanceolate acuminate hairy, 9 cm. long, 2.5 cm. wide with 3-7 nerves. Racemes pendulous flexuous red-hairy, 9 cm. long, basal bract ovate amplexicaul pale coloured, 1 cm. long, floral bracts remote lanceolate acuminate, 1.3 cm. long. Ovary sessile, hairy. Sepals, upper one lanceolate, 1 cm. long, lower ones triangular ovate, falcate, hairy base gibbous, 1 cm. long. Petals linear oblong, tip rounded glabrous, 3-nerved rather short; lip obcuneate, 3-lobed margins denticulate, lobes broadly rounded with several elevated veins papillose on the disc, mid lobe rounded not wider with lines of papillæ on it. Column at the tip quadrate with a large stigma.

This plant has been confused with *Eria ferox*, Lindley, hitherto, from which it differs in the longer acuminate more hairy leaves, longer raceme of flowers, large lanceolate bract, and much larger, more remote flowers. It has, in fact, much more of the habit of *Eria vestita*. It has previously been collected by Curtis (No. 1,325), King's Collector (3,360), at the top of the Larut Hills, and Scortechinii (366 b), probably in the same locality.

118. *CERATOSTYLIS ERIÆOIDES*, *Hooker fil.*

Rare.—Only previously collected in Perak.

119. *NEPHELOPHYLLUM TENUIFLORUM*, *Blume*.
Distrib.—Mountains of Pahang, Perak and Kedah. Also in
 Java and Borneo.
120. *CÆLOGYNE CARNEA*, *Hooker fil.*
 Common in the mountains of Pahang and Perak.
121. *PHOLIDOTA CARNEA*, *Blume*.
 A new record for the Peninsula but also collected on Gunong
 Inas by Yapp. A native of Java.
122. *PODOCHILUS LANCIFOLIA*, *Schlecht.*
Distrib.—Mountains of Pahang, Selangor and Perak.
123. *THELASIS MACROBULBON*, *Ridley*.
Distrib.—Mountains of Perak.
124. *CRYPTOSTYLIS ARACHNITES*, *Blume*.
Distrib.—Common on the hills of the Malay Peninsula and
 in the low country.
125. *HABENARIA ZOSTEROSTYLOIDES*, *Hooker fil.*
Distrib.—Mountains of Malacca, Pahang, Selangor and Perak.

SCITAMINEÆ.

126. *CAMPTANDRA OVATA*, *Ridley*.
 Also on Gunong Ulu Semangko.
127. *GLOBBA PERAKENSIS*, *Ridley*.
Distrib.—Perak Hills.
128. *ALPINIA AURANTIACA*, *Ridley*.
Distrib.—Pahang.
 Apparently this species, but the specimens are not in a good
 enough state to be sure.

LILIACEÆ.

129. *SMILAX CALOPHYLLA*, *Wall.*
Distrib.—The whole Peninsula, from sea-level to 5,000 feet.
130. *SMILAX LÆVIS*, *Wall.*
Distrib.—Mountains of Malacca, Perak, Penang and Kedah.
 Also in China.

AROIDEÆ.

131. *ARISÆMA ROXBURGHII*, *Kunth*.
Distrib.—Selangor, Perak, Pahang, Penang, Langkawi Islands
 and Java, from about 1,000 feet upwards.
132. *ARISÆMA SCORTECHINII*, *Hooker fil.*
Distrib.—Selangor, Pahang, Perak and Penang.
133. *SCINDAPSUS SCORTECHINII*, *Hooker fil.*
Distrib.—Mountains of the Malay Peninsula, from 3,000 to
 5,000 feet.

FILICES.

134. *LECANOPTERIS CARNOSA*, *Blume*.
Common, especially in the hills.
135. *DAVALLIA DISSECTA*, *Blume*.
The specimens are not in fruit but very much resemble this species which has not previously been met with in the Malay Peninsula.
136. *ASPLENIUM TENERUM*, *Forst.*
More common in the low country than on the mountains.
137. *NEPHROLEPIS DAVALLIOIDES*, *Kze.*
Distrib.—Mountains of Selangor and Perak and also in Java.
138. *ELAPHOGLOSSUM LATIFOLIUM*, *Sw.*
Distrib.—Mountains of Pahang, Perak and Kedah.
139. *STENOCHLÆNA SORBIFOLIA*, *Linn.*
The slender creeping sterile state. Common all over the Peninsula.

LYCOPODIACEÆ.

140. *LYCOPODIUM PHLEGMARIA*, *Hook.*
Common all over the Peninsula.
-

ON A FURTHER COLLECTION OF MAMMALS AND BIRDS FROM THE HILLS OF NEGRI SEMBILAN.

By H. C. ROBINSON, C.M.Z.S., M.B.O.U., AND C. BODEN KLOSS, F.Z.S., M.B.O.U.

IN a recent number of this Journal one of us has given a list of a collection of mammals and birds obtained on the Telapa Buroh range in Negri Sembilan, which showed that the Himalaiaic element, which is the dominant feature of the fauna of the higher hills of Pahang, Perak and Selangor, does not extend so far south as Negri Sembilan, and this is confirmed by the present series. In September, 1913, the Dyak collectors of the Museum were sent to collect on Gunong Tampin, in the extreme south of the State, which attains a height of 2,507 feet and may be regarded as the southern termination of the Peninsular main range, hills of greater elevation in Malacca and Johore being quite isolated by wide tracts of low-lying country.

The collection, though not very extensive, contains several species of considerable interest, and we have therefore thought it worth while to give a list in full as it altogether includes six mammals and 25 birds not recorded in the two previous papers.*

The party were camped at about 1,000 feet in heavy jungle, and collections were made from that elevation to the summit.

MAMMALS.

1. SYMPHALANGUS SYNDACTYLUS CONTINENTIS. THOMAS.

Hylobates syndactylus (Desm.); Flower, P.Z.S., 1900, p. 313; Robinson, Journ. Fed. Malay States Mus., i, p. 26 (1905).

A pair of large adults.

The Siamang is rather rare in the south of the Peninsula and is not usually found at low elevations.

2. HYLOBATES LAR (LINN.).

A large female in the black pelage.

3. RATUFA AFFINIS AUREIVENTER (GEOFFR.).

♂, 2 ♀.

Rather variable, one female having the hands and feet dark chocolate brown.

4. RATUFA MELANOPEPLA. MILLER.

2 ♂, ♀.

Apparently as common as the preceding on this hill.

* Robinson, Journ. F.M.S. Museums, i, p. 25, 1905-6.

Kloss, op. cit., iv, p. 219, 1909-11.

5. *SCIURUS VITTATUS MINIATUS*, MILLER.

♀.

Apparently rare.

6. *SCIURUS NIGROVITTATUS JOHORENSIS*, ROB. & WROUGHT.

Journ. Fed. Malay States Mus., iv, p. 166 (1911).

2 ♂, ♀.

Agreeing well with the types.

7. *SCIURUS TENUIS TENUIS*, HORSE.

5 ♂, 3 ♀.

Common.

8. *SCIURUS ROBINSONI ALACRIS*, THOMAS.

♂.

The southernmost recorded locality for this ground squirrel.

9. *PETAURISTA NITIDA MELANOTUS*, GRAY.

♂.

10. *LARISCUS INSIGNIS JALORENSIS*, BONHOTE.

3 ♂, ♀.

Belonging to the duller northern form and not to the brighter sub-species, *L. i. meridionalis*, from Southern Johore and Singapore Island.

11. *RHINOSCIURUS LATICAUDATUS TUPAIOIDES*, BLYTH.

♂.

Tail hoary, each hair with the tip pure white, basal portion buff.

12. *EPIMYS VOCIFERANS* (MILLER).

♀.

13. *EPIMYS PELLAX* (MILLER).

2 ♂, ♀.

It is curious that in this range of hills *E. pellax* seems to have supplanted entirely *E. surifer* which is elsewhere by far the commoner rat.

14. *EPIMYS ASPER* (MILLER).

♀. Immature specimen not sexed.

Tails rather short but the specimens are in indifferent condition.

15. *EPIMYS RATTUS JALORENSIS* (BONHOTE).

2 ♀.

16. *TUPAIA FERRUGINEA FERRUGINEA*, RAFFLES.

2 ♂, 4 ♀.

17. *TUPAIA MALACCANA*, ANDERSON.

♂, ♀.

Much commoner in the south than in the north of the Peninsula and never yet met with on any of the adjacent islands.

18. *URSUS MALAYANUS*, RAFFLES.

A large female was shot as it was descending a tree after robbing a bee's nest.

BIRDS.

1. PTILINOPUS JAMBU (GM.).

6 ♂, 2 ♀.

This beautiful fruit pigeon elsewhere rather rare and decidedly local was common on the hill, feeding on fig trees.

2. CHALCOPHAPS INDICA (LINN.).

♂.

3. HUHUA ORIENTALIS (HORSF.).

♀.

Nowhere abundant, or at least, hard to get.

4. PHOTODILUS BADIUS (HORSF.).

♀.

5. CARCINEUTES PULCHELLUS (HORSF.).

2 ♂, 2 ♀.

6. NYCTIORNIS AMICTA (TEMM.).

1 ♂, 2 ♀.

7. HIEROCOCCYX NISICOLOR (HODGS.).

♂.

8. ZANCLOSTOMUS JAVANICUS (HORSF.).

♂.

9. UROCOCCYX ERYTHROGNATHUS (HARTL.).

2 ♂.

10. RHINORTHA CHLOROPHÆA (RAFFLES).

♂.

11. PYROTROGON NEGLECTUS, FORBES & ROBINSON.

♂, ♀.

12. PYROTROGON KASUMBA (RAFFLES).

♂.

This specimen has a narrow bar of scarlet on the rump above the upper tail coverts. The same abnormality has been noted in an adult male from Malacca (Ogilvie Grant, *Cat. Birds Brit. Mus.*, xvii., p. 484), but is apparently not constant.

13. CALORHAMPHUS HAYI (J. E. GREY).

♂, ♀.

14. CHOTORHEA CHRYSOPOGON (TEMM.).

♂, 2 ♀.

15. CHOTORHEA MYSTACOPHANES (TEMM.).

♂, 3 ♀.

16. CYANOPS HENRICI (TEMM.).

♂, 2 ♀.

17. PYRRHOPICUS PORPHYROMELAS (BOIE.).

♀.

18. MIGLYPTES GRAMMITHORAX (MILL.).

♂, 2 ♀.

19. MIGLYPTES TUKKI (LESS).

♂

20. CHRYSOPHLEGMA HUMII, HARGITT.

♀

21. CALYPTOMENA VIRIDIS, RAFFLES.

2 ♂, 2 ♀.

22. EURYLEMUS OCHROMELAS, RAFFLES.

♂, 4 ♀.

23. CYORNIS CONCRETA (S. MULL).

Robinson, Journ. Fed. Malay States Mus., ii, p. 187 (1909).

♂.

This Flycatcher is normally an inhabitant of the high hills above 3,000 feet and has not hitherto been found south of Ginting Bidei in Selangor. It has also been shot on Gunong Tahan, between 500-1,000 feet, so that it is evidently not absolutely confined to the mountains.

24. HYPOTHYMIS AZUREA (BODD.).

Hypothymis azurea prophata, Oberholser, Proc. U.S. Nat. Mus., 39, p. 597 (1911).

♂, ♀.

25. RHIPIDURA PERLATA, S. MULL.

♂.

26. TERPSIPHONE INCH, GOULD.

♂, ♀.

Rare in Malayan collections though not improbably commoner than it appears. Probably a seasonal visitor from China and Japan.

27. TERPSIPHONE AFFINIS (BLYTH).

♀.

28. PHILENTOMA VELATUM (TEMML.).

2 ♀.

29. PHILENTOMA PYRRHOPTERUM (TEMML.).

♂, 2 ♀.

30. CULICICAPA CEYLONENSIS (SWAINS).

2 ♂, ♀.

31. STOPAROLA THALASSINOIDES (CAB.).

♀.

By no means common in the south of the Peninsula.

32. PERICROCOTUS IGNEUS, BLYTH.

♂.

33. CHLOROPSIS ZOSTEROPS (VIG.).

♂.

34. CHLOROPSIS ICTEROCEPHALA (LESS).

3 ♂, ♀.

35. CHLOROPSIS CYANOPOGON (TEMML.).

2 ♂.

36. *HEMIXUS CINEREUS* (BLYTH).
 ♂.
 37. *HEMIXUS MALACCENSIS* (BLYTH).
 4 ♂, 2 ♀.
 38. *MICROTARSUS MELANOCEPHALUS* (GM.).
 2 ♀.
 39. *MICROTARSUS MELANOLEUCUS* (EYTON).
 ♂, 2 ♀.
 40. *CRINIGER TEPHROGENYS*, JARD. AND SELBY.
 ♂, ♀.
 41. *ALOPHOIXUS PHEOCEPHALUS* (HARTL.).
 ♂.
 42. *PYCNONOTUS SIMPLEX* (LESS.).
 ♀.
 43. *PYCNONOTUS SALVADORII*, SHARPE.
 ♀.
 44. *EUPETES MACROCERCUS* (TEMML.).
 ♂.
 45. *POMATORHINUS BORNEENSIS*, CAB.
 ♂, 2 ♀.
 46. *TURDINUS SEPIARIUS* (HORST.).

Robinson, Journ. Fed. Malay States Mus., ii, p. 198 (1909).

♀.

A submontane bird living in deeper jungle and at slightly higher elevation than the very closely allied *T. abbotti*, which is often found in secondary forest and orchard land.

47. *TURDINUS MAGNIROSTRIS* (BLYTH).
 4 ♂, 2 ♀.
 48. *DRYOCATAPHTUS NIGROCAPITATUS* (EYTON).
 4.
 49. *ANUROPSIS MALACCENSIS*, HARTL.
 3 ♀.
 50. *CORYTHOICHLA STRIATA LEUCOSTICTA*, SHARPE.
 ♂

The occurrence of a single male of this species on Gunong Tampin is rather surprising as throughout the Federated Malay States it is strictly confined to the higher mountains.

Incidentally it may be noted that the form is very doubtfully distinct from *C. brevicaudatus* (Blyth), *Journ. Asiat. Soc., Bengal*, xxiv, p. 272 (1855), from "the mountainous interior of the Tenasserim Province" with which it agrees in having the sides of the head ashy grey, not rufescent, and the spots on the tips of the wing coverts white, not fulvous.

Dr. Sharpe, in diagnosing the species, has given these characters as separating it from *C. striata*, but has omitted to compare it with *C. brevicaudata*, of which, at the time, there appeared to be no specimens in the British Museum, and all subsequent authors have followed his lead.

51. *TURDINULUS GRANTI*. RICHMOND.

Turdinulus humii. Robinson, Journ. Fed. Malay States Mus., i, p. 26 (1905).

♂. 4 ♀.

Commoner on the Negri Sembilan hills than anywhere else in the Peninsula.

52. *ALCIPPE CINEREA*. BLYTH.

♂.

53. *STACHYRIS DAVISONI*. SHARPE.

3 ♂. 3 ♀.

54. *STACHYRIS POLIOCEPHALA* (TEMML.).

♂. ♀.

55. *STACHYRIS LEUCOTIS* (STRICKL.).

2 ♂. 5 ♀.

Common in Negri Sembilan but much rarer to the north.

56. *STACHYRIS MACULATA* (TEMML.).

2 ♂.

57. *CYANODERMA ERYTHROPTERUM* (BLYTH).

2 ♂. 1 ♀.

58. *HERPORNIS ZANTHOLEUCA* HODGES.

♂. 1 ♀.

59. *GEOCICHLA INTERPRES*. (TEMML.).

Geocichla avensis, Hume, Stray, Feath., viii, p. 39 (79); Oates. Faun. Brit. Ind., *Birds*, ii, p. 138 (1890).

1 imm.

In 1878 one of Hume's collectors obtained an immature thrush from the hills of Rembau, which was identified with the species described by Grey from a native drawing from a specimen procured in Upper Burma, while Dr. Abbott also collected specimens identified as *G. interpres* by Richmond on the hills of Trang, Western Siamese States, in 1896; no other examples have been recorded from the Malay Peninsula. Hume relied on the absence of a white wing bar in his specimen to separate it from *G. interpres*, but Oates, *loc. cit.*, states that the specimen is in moult and that the sprouting feathers appear to possess this feature which is fully developed in our specimen from Tampin. Our collectors confused the bird with immature *Hyrdocichla ruficapilla* which affects similar situations and which they have been told not to collect in numbers, and this perhaps accounts for its not having been obtained before. Possibly also, as is the case with the other species of *Geocichla* in the Peninsula, the species is migratory.

There is, we think, little doubt that the nominal species, *G. avensis*, has no existence in fact.

♂. 60. *HYDROICHLA FRONTALIS* (BLYTH).

Very much rarer than the next species.

♀. 61. *HYDROICHLA RUFICAPILLA* (TEMML).

♀. 62. *CITTOCINCLA MACRURA* (GM.).

♀. 63. *ACANTHOPNEUSTE BOREALIS* (BLAS.).

♀. 64. *LANIUS TIGRINUS*, DRAP.

2 ♂, 4 ♀. 65. *DENDROPHILA SATURATION*, HARTERT.

♂, ♀.

Exceptionally deep in tone.

♀. 66. *DICRURUS ANNECTENS*, HODGS.

♀. 67. *ORIOULUS ZANTHONOTUS*, HORSE.

4 ♂. 68. *AETHOPYGA TEMMINCKI* (HORSE.).

Common in the Negri Sembilan hills, replacing *Ae. siparaja* of the sea coast.

2 ♂, 2 ♀. 69. *ANTHOTHREPTES HYPOGRAMMICA* (S. MULL).

♂, ♀. 70. *ARACHNOTHERA LONGIROSTRIS* (LATH.).

♂. 71. *PRIONOCHILUS IGNICAPILLUS*, EYTON.

♂, 2 ♀. 72. *PRIONOCHILUS MACULATUS*, TEMML.

MEASUREMENTS OF SOME BIDUANDA (MANTRA) OF ULU KENABOI, JELEBU.

By C. BODEN KLOSS, F.R.A.S.

(PLATES III-XIII).

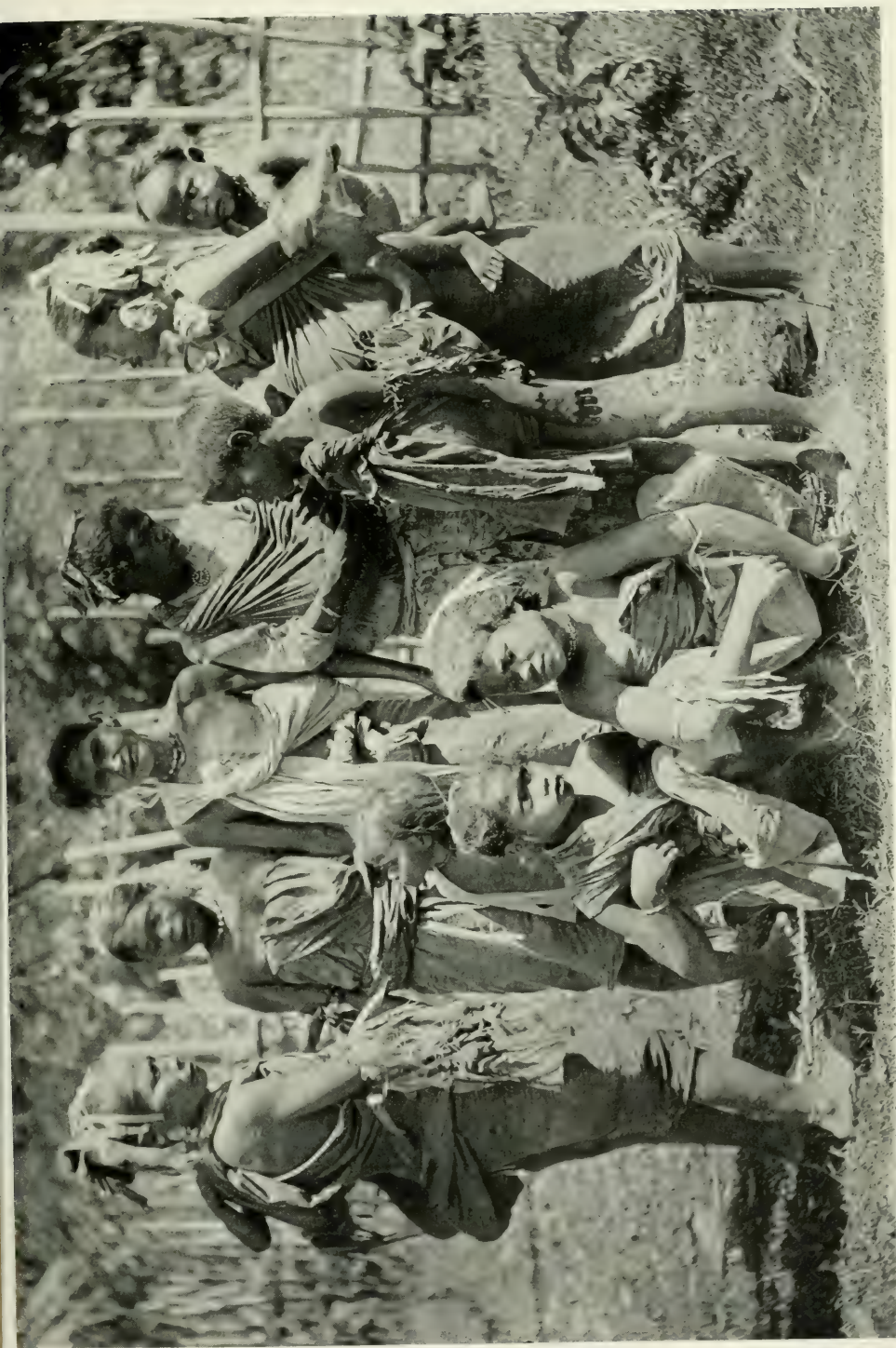
IN January, 1912, while in Negri Sembilan, I heard of the presence of a small party of Biduanda (Mantra) at a Malay village in Ulu Kenaboi, and was able to pay them a flying visit.

The information obtained from the party themselves (I was unable to visit their homes) is corroborated by Mr. Evans in an article appearing in the present Journal and therefore need not be repeated, but the measurements taken, being somewhat more extensive than his, are given here together with a number of photographs from which physical characters, dress and ornaments can be gathered. In complexion the Biduanda did not differ from the Malays, who were their neighbours.

The stature measurements of the women were 1363, 1406, 1375, 1440, 1510, 1434 and 1428 millimetres.

The majority of the party gave the name of their village as Kenaboi Tikin, but Nos. 1, 2 and 11 came from Kenaboi Hilir.

Number ...	1	2	3	4	5	6	7	8	9	10	11	AVERAGE
	21	30	21	40	40	17	...	18	...	20	35	
Age	...	...	...	...	...	...	...	...	...	...	...	...
Character of hair	wavy	wavy	curly	curly	wavy	wavy	wavy	wavy	wavy	wavy	wavy	...
Epicanthus	marked	slight	marked	slight	slight	slight	marked	marked	marked	marked	very slight	...
MEASUREMENTS OF MEN IN MILLIMETRES.												
Stature	1488	1567	1566	1487	1482	1486	1535	1600	1659	1509	1568	1549.7
Length of head	176	181.5	182	179.5	176	171	184	187	183	178	187	180.4
Breadth of head	135	145	137	141	136.5	140	135.5	145	146.5	135	137	139.4
Height of head	131	130	129	129	126	131	128	136	136	124	125	129.6
Length of face	109.5	107	115	110.5	102	102	97.5	110	104	97	114	106.0
Breadth of face	132.5	134.5	132.5	136.5	125	130	130	131.5	143	132.5	132	132.7
Bigonial breadth	98	101	101	99	95	103	101	99	114	107	107	102.2
Interocular breadth	32	35	36	33.5	34	31.5	34.5	37	34	33.3	33	34.0
Length of nose	48	48.5	54	44	41.5	39	44	42	43.5	40.5	45.5	45.5
Breadth of nose	41.5	46	41	43.5	35.5	36.5	41	42	40	45	36.5	40.8
Circumference of chest	700	788	826	803	766	774	784	815	926	799	873	805.0
INDICES.												
Cephalic index	71.0	79.9	75.3	78.2	71.9	81.9	73.6	77.5	78.1	75.8	73.3	76.0
Vertical index	74.4	71.6	70.9	71.9	71.6	76.6	69.5	72.2	74.3	69.6	66.8	71.9
Facial index	82.6	79.6	86.8	80.9	81.6	78.5	75.0	83.6	72.7	73.2	86.4	80.1
Nasal index	86.5	94.8	75.9	98.4	85.5	93.6	93.2	100.0	91.9	111.0	80.2	91.9



C. B. Kloss, Photo.

MANTRA OR BIDUANDA ABORIGINES, KENABOI VALLEY, NEGRI SEMBILAN.



C. B. Kloss Photo.

MANTRA OR BIDUANDA ABORIGINES, KENABOI VALLEY, NEGRI SEMBILAN.



MANTRA OR BIDUANDA ABORIGINES, KENABOI VALLEY, NEGRI SEMBILAN.

C. B. Klass, Photo.



MANTRA OR BIDUANDA ABORIGINES, KENABOI VALLEY, NEGRI SEMBILAN.



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C. B. Kloss, Photo.



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MANTRA OR BIDUANDA ABORIGINES, KENABOI VALLEY, NEGRI SEMBILAN.



C. B. Klass, Photo.

MANTRA OR BIDUANDA ABORIGINES, KENABOI VALLEY, NEGRI SEMBILAN.



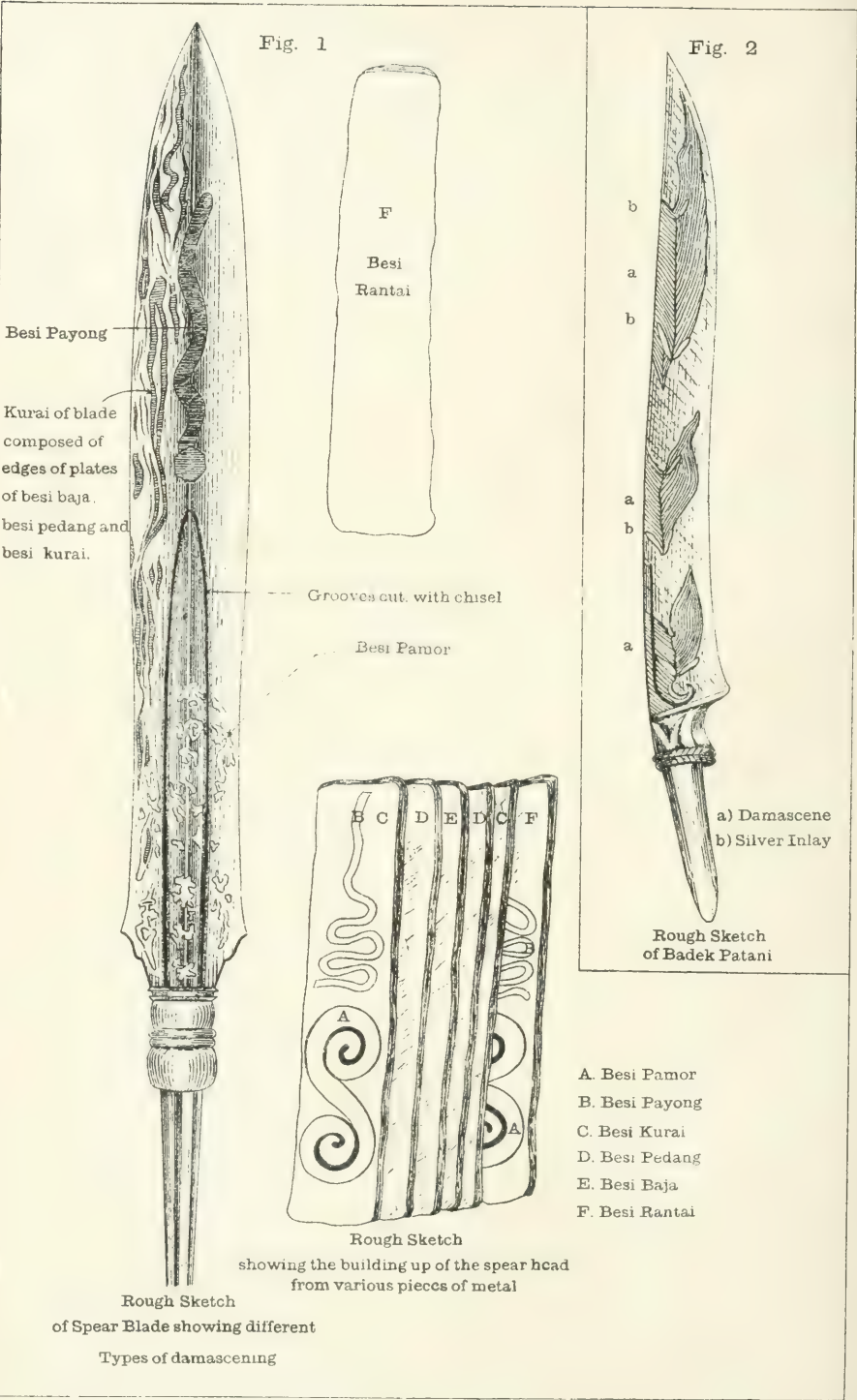
C. B. Kloss, Photo.

MANTRA OR BIDUANDA ABORIGINES, KENABOI VALLEY, NEGRI SEMBILAN.



B. Kloss. Photo.

MANTRA OR BIDUANDA ABORIGINES, KENABOI VALLEY, NEGRI SEMBILAN.



NOTES ON THE MANUFACTURE OF DAMASCENED SPEAR AND KNIFE BLADES IN THE MALAY STATES.

By I. H. EVANS, B.A.,

ASSISTANT CURATOR AND ETHNOGRAPHICAL ASSISTANT, F.M.S. MUSEUMS.

THE writer had recently the good fortune to come across a Malay kris-smith's forge. The art of damascening as applied to the blades of weapons is rapidly dying out in all parts of the Peninsula, and is virtually extinct in so far as the Federated Malay States are concerned; therefore, such facts as can still be gathered concerning an industry for which Malay craftsmen* of old were not unjustly celebrated should be put on record without delay. These notes consist entirely of personal observations, but those who wish to consult other papers should read the excellent account of kris making by Mr. R. O. Winstedt in the series of monographs on Malay subjects published by the Federated Malay States Government, and an article by Mr. W. Rosenhain in Vol. XXXI of the *Journal of the Anthropological Institute*, which deals largely with the microscopical aspect of the damascening as well as with the manufacture of blades. Both these communications are founded on notes taken by Mr. W. W. Skeat in Trengganu. There is also a paper by Mr. L. Wray in No. 3 of *Perak Museum Notes* "On the Malay Method of Colouring Kris and other Blades with Arsenic," which gives an account of the chemical combinations into which the arsenic enters with the different qualities of steel and iron of which Malay kris blades are composed.

It is interesting to note that in spite of the prohibition forbidding the wearing of weapons in public places, the Malay in many districts has not by any means conquered his passion for a handy weapon. The consequence of the ordinance merely is that instead of carrying a kris in his waist-sash, which from its very openness promotes good behaviour and politeness, he now wears a venomous little dagger, either *tumbuk lada*, *badek* or diminutive kris, concealed beneath his clothes. These small daggers were being turned out in numbers by the smith above mentioned and his brother.

The former, a young Patani† Malay named Awang, had set up his forge at Lenggong in Upper Perak, and in his company the writer spent several days in January, 1913, watching the processes

* Though Malay smiths of former days were undoubtedly skilled in kris-making, probably many of the very finest blades found in the Peninsula are of Javanese, Sumatran, or Bugis origin.

It is more than doubtful if any considerable manufacture of weapons was ever carried on in any of the West Coast States, though large numbers were turned out at Trengganu and to a less extent in Kelantan and Patani.—H.C.R.

† "Patani" as used in Upper Perak may connote anything coming from the Monthon Patani, known to Malays as the "*Tujoh buah nēgri*," as the district is made up of seven small States. The Upper Perak Patani Malay is usually from Rhaman or Legeh, not often from the small coastal district of Patani to which the name is nowadays confined.—H.C.R.

described below. Before giving an account of the method of manufacture of spear and knife blades some details of the tools used in the work may not be out of place, so as to give an idea of the very simple means by which quite complicated results are obtained. The smith's forge consists of a circular semi-open hearth of hard dried mud, built under a slight shed. On one side of this hearth is a horizontal box-bellows of Chinese type, which is about 5 feet long. The blast from the bellows passes through an iron pipe in the side of the box, the outlet of which is in the centre of the hearth a little below the level of the fire, there being a grating of iron rods covering the top of the short passage leading from the hearth centre to the entrance of the pipe in order to prevent either of these becoming choked by ashes. The fire, the fuel for which is charcoal, is protected by mud walls about $1\frac{1}{2}$ feet high, except at the front and back, the former being open and the latter closed by a small sheet of iron or an old changkul (native hoe) blade. The smith's tools and apparatus consist of a small anvil made from a block of iron set in the top of a large wooden post, a couple of pairs of roughly made but effective pincers, two hammers, one or two short cold chisels lashed at right angles with hide or rattan binding into a wooden haft about $2\frac{1}{2}$ feet long, the top of which is split to receive the iron, a set of files, a pump drill with a cord of bullock hide, and a small moveable vice, the last-named as well as the files being of foreign manufacture. Small gouges and chisels for cutting ornamental grooves in spear or kris blades are also used, but are generally made as occasion requires. In addition to these the smith has a small grindstone or emery wheel which is fitted on one side with a wood-covered spindle. When in use the wheel is pivoted between two upright posts and is worked by alternately pulling and releasing a cord which is wound round the spindle and attached to it at the end farthest from the stone. This operation is performed by an assistant and the blade being ground is only applied to the stone when its revolution is away from the grinder. The specimens of work which were obtained from the smith, and are now in the Perak Museum, consist of a knife, with < shaped damascening, of the type usually called *tumbuk lada* (the pepper crusher) but by the smith *badek Patani*, a damascened spear blade and a set of pieces illustrating the manufacture of the latter. In making the spear blade a number of pieces of iron and steel are cut and forged down until they form plates of roughly the following dimensions: length 105 mm., breadth 20 mm., thickness 3 mm. The piece selected to form the central layer of the spear is slightly thicker than the others and is of steel (*běsi baja*), on either side of this are placed a plate of steel (*běsi pedang*) made from an old scythe blade, and outside each of these again a plate of *běsi kurai*, iron or steel of unknown composition, which the smith said he obtained from the Patani States. There are also two other plates, one on each side, composed of old Government elephant chain (*běsi rantai*), but these only form a guard over

the damascening (*pamur*) during welding. To make the *pamur* for the particular pattern of spear chosen for the Museum, two pieces of old umbrella-rib were taken and worked into the shape shown in Pl. XIV; next two stripes of *běsi pamur* (soft wrought iron?), also obtained from Patani, were bent into scrolls (Pl. XIV) and hammered flat. These four pieces of metal form the *pamur*, being placed, one of each kind, outside the two plates of *běsi kurai*, with the *běsi payong* nearest the end which is to form the point of the spear. The plates of *běsi rantai* are added outside these and the whole "sandwich" is taken and carefully heated and then dipped in a mixture of sand and water to which has been added a pinch or two of iron flakes taken from below the anvil. When the pieces have been thoroughly covered with sand they are grasped with the pincers and again placed in the fire, which has some little time previously been sprinkled with the wet sand: the sand according to the smith acts as a flux (*pětěrì*). They are next taken from the fire, beaten on the anvil, re-dipped in the sand, heated and beaten until all the layers have been welded together. The block thus formed is then further dipped, heated, and beaten on all its faces until no crevices are left, losing in the process a considerable amount of weight through scaling. When the welding has been completed to the smith's satisfaction, he takes the block and forges it out into the required shape of the spear head. Next, he slightly files the blade and rubs it with a mixture of lime juice, sulphur, and salt, in order to bring up any *pamur* which may be visible owing to the scaling away of the guard plates of *běsi rantai*. He is thus able to judge to what extent he can file up the blade without injuring the damascene. When the filing process has been completed, two ornamental grooves are cut on each side of the blade near its base, and the round ornaments below the base filed into shape. Next, the blade is heated and dipped into a mixture of buffalo fat, turtle fat and coconut oil to temper it. Then it is wiped dry and ground on the emery wheel until sufficiently polished. At this stage the damascening is invisible, or nearly so, and the blade requires to undergo a pickling and developing process in order to bring it out. With this object it is placed in a bamboo containing a mixture of lime juice, coconut milk, a little of the water used for washing rice, which has been collected from the pool of slops which is found below all Malay houses, pineapple leaves, saltpetre, pieces of *Lengkuas** stem and *Gamas* leaves (?). The blade is left in this mixture for a couple of nights or so, until the smith considers that the pickling or etching process is sufficiently advanced. He then cleans it in preparation for the treatment which is finally to bring up the damascening. For this he takes a small piece of red arsenic, such as is generally sold in the bazaars, half a lime, and a little juice expressed from a piece of *Lengkuas* stem. He spreads his mat in the open, and grasping the spear head in his

* *Lengkuas* is, according to Wilkinson, either *Alpinia conchigera* or *Alpinia galanga*.

left hand exposes one face to the full light of the sun, meanwhile rubbing it lightly with the arsenic and lime juice, etc. The damascening up to this time has been very slightly visible, but after a few minutes treatment with these materials comes into view quite clearly, much as the picture becomes visible on a photographic plate when immersed in the developer. The other face of the blade is then treated in the same way and the spear head is complete.

THE USE OF THE TERMS PAMUR AND DAMASCENE.

The term *pamur*, as used by the Malays, is not synonymous with the English word damascening. The *pamur* of a blade, strictly speaking, consists only of small ornamental pieces of metal-work applied to those surfaces of the welded block which are to become the faces of the blade. The wavy pattern along the sides of the kris or spear blade, which arises from the hammering out of the welded plates in such a way that the centre plate projects furthest at the edges and the two outer plates least, so that the edges of the plates appear in regular gradation, is by the Malays termed *kurai*. Thus in the spear-head described above only the pieces of *běsi payong* and *běsi pamur* form the *pamur*, while the edges of the *běsi baja*, *běsi pėdang*, and *běsi kurai* make up the *kurai*.

MAKING THE BADEK PATANI.

In manufacturing the blade of this knife the smith first took two rods, one of *běsi kurai* and the other of *běsi baja* (steel) and welded them into a single bar. This when complete had a length of about one foot and a cross section roughly of half an inch by a quarter of an inch.

The bar was then heated in the fire, seized with two pairs of pincers and given a strong right spiral twist along one-half of its length, several re-heatings being necessary before the process was complete. The other half of the bar was similarly treated, except that instead of a right it was given a left spiral twist. The portions twisted to the right and left thus met in the centre of the bar. Next, the broader sides of the bar were beaten with a hammer until the twist on them was flattened down, and then the whole bar was bent in the centre to form a U. The U was further heated and beaten until the limbs came to lie together and had become fused. Then a piece of steel corresponding in length to a single limb of the U—that is to say, about 6 inches or 7 inches long and $\frac{3}{4}$ inch thick, was welded to the outer side of the U limb with the left spiral. This piece of steel becomes the edge of the knife, the limb with the left spiral the lower portion of the V-shaped damascening, and that with the right spiral forms the upper part of the damascene and the back of the blade. The three portions are forged into one solid block and, when complete fusion has taken place, are further hammered till they attain the shape of blade required. The methods of welding, polishing and bringing up the damascene are the same as those used

for the spear head. The blade when thus completed has a plain undamascened edge, but the back on either side is composed of alternate V-shaped bands of lighter and darker metal, the damascening being further accentuated by the outer edges of the darker metal V's being inlaid with small stripes of silver. The inlay is effected by cutting a groove in the iron with a small cold chisel and laying in a shred of silver; the edges of the cut left by the chisel are then hammered down until the silver is firmly gripped by them.

THE SMITH'S CHARMS.

As in the case of most of the callings followed by Malays that of a kris-smith can boast its own peculiar set of formulæ devoted to invoking the particular spirits whom the smith looks upon as the guardian genii of his trade. The two specimens given below are used in the welding of iron; but the smith also recites them at the monthly "smith's promise" (Jangi tukang) which is sometimes called Jemuan hantu or the feeding of the spirits. Behind the smith's forge is a funnel-shaped cup, made from a rolled leaf planted in the ground; this is for holding a small offering such as an egg or a little coconut oil. It is in and around this cup that the monthly offering is placed.

THE INVOCATIONS.

(1) Bismi'llahi'r rahmani' r-rahimi. As'salam alaikum, Tabek Pandai Kuma, Pandai Bakar, Guru yang hormat Guru yang harkat, walfat Inna A-athainna, kul kat.

(2) As'salamu alaikum, Hantu Tanah Jëmbalang Bumi, Jin Hitam sa-gema api, mari makan jamuan aku, Jin Puteh, Nur Muhammad, di-dëngar ëngkau pësan aku. ëngkau ta'-dëngar pësan aku, aku sumpah. bumi sa-tapak tiada mënanggong, ayer sa-titek tiada bërjumpa, jikalau ta'-lëkat ëngkau tolong pëlëkatkan.

These may be roughly translated as follows:

- (1) In the name of God the Merciful, the Compassionate, Greetings to ye, Greeting, O Smith, Master of the Hammer, Master of the Forge, Reverenced Teacher, Famous Instructor—(Debased Arabic, probably some form of greeting).
- (2) Greeting to you O Spirits of the Earth and of the World and to you Black Spirit, Flame of Fire; come eat the feast I have prepared you. Hear my commands, O White Spirits, Parrots of Mohammad. If you hear them not I curse you, may no sod of earth support your feet, no drop of water quench your thirst. If the (iron) welds not, help its welding.

These invocations, as is the case in almost all Malay spells or charms, present a curious mixture of Mohammedanism and spirit or nature worship; in many cases a leavening of Hinduism is further added.

NOTES ON THE ABORIGINES OF LENGGONG AND KUALA KENERING, UPPER PERAK.

BY I. H. EVANS, B.A.,

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THOUGH on linguistic grounds the aborigines of Lenggong are placed by Skeat among the Northern Sakai, ethnologically there can be little doubt that Negrito blood preponderates enormously over any other. That there is, however, some slight Sakai element among them seems most probable. They describe themselves as being considerably lighter in colour than the pure Semang of Grit, who also speak a Sakai dialect with a few interspersed words of Semang origin. Skeat does full justice to the Negrito origin of the Lenggong people and attributes their language to encroachment of Sakai dialects upon Semang.

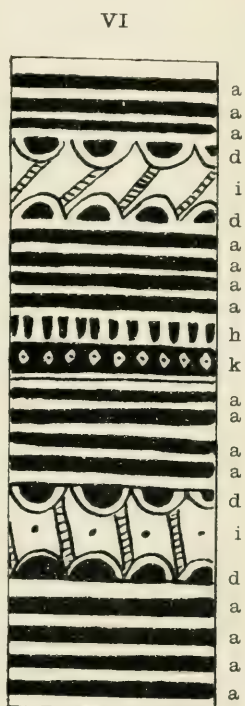
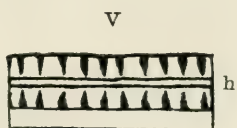
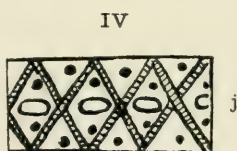
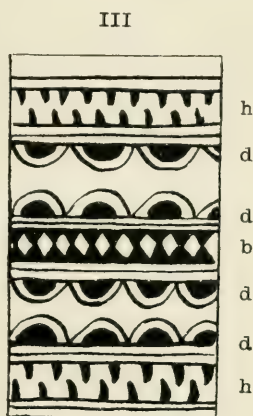
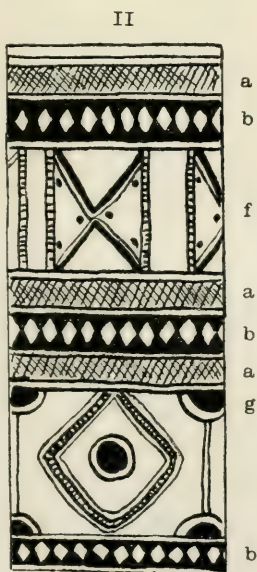
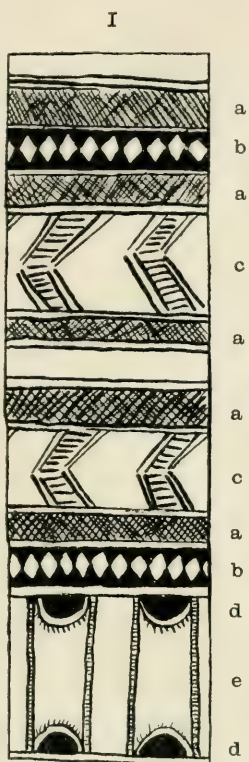
The writer spent some three weeks in Upper Perak in January, 1913, with the view of getting into touch with these interesting people. Two encampments were visited, one on a hill close above Lenggong, the other about a mile and a half from Kampong Gelok, which place is situated some two and a half miles from Lenggong on the Grit (or Gris) road.

A wandering anthropologist being to the native mind a person without any ostensible business except that of poking his nose into all kinds of ungodly matters which should not concern him, and being armed moreover with a battery of mysterious and fearsome instruments, such as callipers and measuring rods, is liable, move he never so carefully, to be suspected of ulterior designs upon the people he is attempting to study.

In spite of these drawbacks the expedition was not altogether a failure, either with regard to aboriginal or Malay investigations.

HABITATIONS AND INHABITANTS.

The Lenggong settlement and that near K. Gelok differed considerably in the type of dwelling in use. At Lenggong the Negritos were living in a number of huts made of tepus leaves lashed to a light framework of saplings. The essential plan of a hut was that of two wind-shelters set opposite to each other and arching over slightly so as to meet at the top. Sometimes, however, a whole arch frame was made from a single piece of wood. In several instances, in order to afford greater protection, one end of the hut was shut up by a frame of sticks covered with palm leaves. Each hut had its own fireplace and also a sleeping platform of bamboos over a framework of sticks, which was raised about a foot from the ground. As far as the writer could ascertain separate huts were assigned to married couples, bachelors, and unmarried girls.



The Gelok encampment consisted of three shelters so arranged as to enclose an oval piece of ground some 25 feet by 15 feet. The shelters, though leaning towards one another at a considerable angle from the perpendicular, did not meet in the middle and left a space about 6 feet wide open down the centre. One side of the hut was occupied by the women and children and the other by the young men, the ends being reserved respectively for, Toh Singha the headman of the camp and a married couple. Altogether, there were 13 people in the camp—one old man, one middle-aged man, three youths, one small boy, one baby (male), one very old woman, one middle-aged woman, one young married woman, one girl of about 15, and two small girls. The Negrito settlement at Ayer Balik was not visited. The Lenggong camp was said to have been in use for more than two months. A fire of logs placed radially was burning in every shelter in both the encampments.

TRIBAL NAME AND ORGANIZATION.

The writer had great difficulty in obtaining the correct name of the tribe, one man, Sapi or Goh, informed him that the correct style was Semang. On the other hand, Dahabok, the headman of the Lenggong encampment, vigorously denied this and said that his people should be called Sakai Jeram (Sakai of the rapids). The latter of these names at any rate is purely Malay. It seemed impossible to ascertain the name used by the Negritos themselves, but subsequently the writer obtained information from the aborigines of Ijok in Selama, with whom several Lenggong men were living, that the correct name for these people in the Lenggong dialect was "*Semark blum*," "*People of the big water*" (semark=men, blum=big). The Ijok people called themselves "*Menik gul*," "*People of the marsh or coast lands*" (menik in the Ijok dialect=men). Many of the aboriginal tribes of the Peninsula dislike the use of the names Sakai or Semang, which are often used by Malays as terms of ridicule or opprobrium. Tamil coolies, who from their long hair and habit of wearing a loin-cloth are objects of derision to the Malay, are sometimes dubbed *Sakai pekan* or town Sakai. Not infrequently a Malay will openly express his doubts as to whether the aboriginal is a human being at all.

The aboriginals knowing all this—and being very sensitive about it—consider the term Sakai, which is used by the Malays to describe most of the jungle tribes, abusive and prefer to be called by some other name to which no stigma is attached, such as Orang Bukit (Hill men), Orang Laut (Men of the sea), or Orang Sabat* (said to mean friendly people).

Possibly the difficulty experienced at Lenggong in obtaining the name of the tribe (as used by the Malays) was due to some such cause, though the Malays themselves seemed uncertain as to the correct designation which should be applied. The idea that the

* Or *Sahabat*.—H.C.R.

term Semang indicates a race with woolly hair and a black skin seems to have obtained a hold on several of the Negritos of Lenggong, and giving these features as characteristics they tried to make it plain that they had nothing to do with any such people, one man saying that the Semang lived at Ijok, another that they were the aborigines of Grit, and the third that they were the hill tribes who live across the Perak river. It would, however, perhaps be difficult to find people in the Peninsula with more woolly hair than some of the individuals seen at Lenggong, while the skin colour too was often extremely dark.

Tribal organization appears to be but slightly developed. An elderly man is the acknowledged head of every encampment and he is to a certain extent recognized by the local Malays as chief of the aborigines. A high sounding title, such as Penglima or Datoh, is sometimes conferred on him in jest and of this he is generally inordinately proud.

PHYSICAL FEATURES AND MEASUREMENTS.

The average colour of the people was a dusky chocolate, the women being as a rule rather lighter than the men. Almost every individual was filthily dirty, water for bathing purposes seeming to be at a discount. For this reason the real skin colour is probably a great many shades lighter than it appears to be; in a few cases the skin over the cheek-bones which had in some manner been wiped more or less clean showed up as a rich red brown. In addition to their dirty condition about one-half the total population were badly afflicted with "Kurap," a very unpleasant skin disease of fungoid origin (*Tinea circinata*), and a few individuals were suffering from a form of indurated ulcer. In about 70 per cent. of the males the hair could be described as being of the true pepper-corn type, while in almost 20 per cent. it was as straight as in Malays. The rareness of intermediate types was very noticeable. None of the men wore their hair more than three inches long, and the majority had it a great deal shorter. The women's heads were close shaven with the exception of a single tuft in the median line at the back. This tuft seemed to be about 9 inches to 1 foot long and the hair looked harsh and frizzly. In many cases, both in men and women, the hair had a distinctly rust red tinge. With regard to facial characteristics, the forehead was generally low and rounded, the nose low at bridge and root, the nostrils broad and depressed. The eyes were placed fairly wide apart, but were rather narrow. No trace of Mongolian fold was observeable. The lips were usually rather thick than thin, but not abnormally so; slight prognathism was common, and in a few cases the lower jaw-bone was prominent and heavy at its angle.

On the exceedingly small number of measurements taken it would be unwise to attempt any kind of generalization. The writer

therefore contents himself with merely giving the results obtained and pointing out that the cephalic indices of the individual ranged from brachycephaly to mesaticephaly. All persons measured were adult males.

MEASUREMENTS IN MILLIMETRES.

Serial No. of individual.	Name.	Height.	Head length.	Head breadth.	Cephalic index.
1 ...	...	1497 ...	186 ...	145 ...	77.9
2 ...	...	1522 ...	178 ...	141 ...	78.5
3 ..	Keladi ...	1480 ...	183 ...	146 ...	79.7
4 ...	Puchok ...	1394 ..	185 ...	145 ...	78.3
5 ..	Goh ...	1583 ..	177 ...	148 ...	83.6
6 ...	Goh ...	1429 ...	178 ...	140 ...	78.6
7 ...	Dahabok ...	1497 ...	186 ...	145 ...	77.9
8 ...	Chalah ...	...	176 ...	141 ...	80.1

CHARACTER.

Continuous intercourse with both Malays and Chinese has had anything but a happy effect on the aborigines of Lenggong. While still retaining much of the timidity of jungle men, they have substituted for their primitive good qualities, lying, deceitfulness and rapacity. Some few have been further demoralized by the vice of opium smoking, with which it is probable that some Chinaman or Malay has infected them of set purpose in order that they might become permanently attached to him owing to their craving for the drug. In spite of their faults they seem to be, when in their own encampments, a merry and cheerful little people.

DRESS AND ADORNMENT.

In visiting the Negrito encampments the thing which perhaps struck the writer most was the people's great love of dressing up and their fondness for using flowers for this purpose. The young bloods seemed to do little else in their spare time and many of them had decorated their heads with wreaths of purple and white everlasting flowers (Malay, Bunga tiga bulan) which were threaded on the stalks of some fibrous plant; head-dresses of yellow blossoms were also in favour, and one boy had on a fillet of green pandanus leaf decorated with yellow flowers at the top. Other men wore head-bands of Akar batu, a fungus rhizomorph which is very generally believed by the aborigines of the Peninsula to be a charm against *hujan panas* (lit. hot rain), "April showers." At such times the evil spirits of the air are, according to native legendry, said to have power of bringing disaster to mortals. Fever is much dreaded by both Sakai and Semang and is often said to be the result of "hujan panas." Three youths in the Lenggong encampment were wearing thick bands of twisted grass around their foreheads, tied at the back

so as to leave a long tail hanging down behind. Two Jew-harps of bamboo were attached to one of these wreaths and depended down the side of the owner's face. Bracelets of *akar batu* were very generally used by the men and necklaces of the same material were also common. Two women had bamboo combs stuck in the lock of hair mentioned above, these had the true Negrito type of decoration—that is to say, much of the ornamentation was produced by cutting away the white outer skin of the bamboo to form the background and leaving the patterns standing out slightly in relief. This background is rubbed with *damar kelulut* (a resin used by a small species of bee to make its nest) to give it a rich brown appearance, and the white skin of the patterns shows up clearly against it. Sometimes this process is reversed and the bamboo skin removed to form the patterns, the background remaining untouched. In typical Sakai ornamentation neither of these two methods are employed; the designs are always merely scratched in and coloured. Negrito tribes frequently use scratched-in patterns, but on a finished article there are generally to be found several bands in which the patterns have been produced by removing the outer skin of the bamboo worn in the jungle. The men were all wearing loin-cloths of calico or other European material and the women either sarongs of Malay type girt beneath the breasts or short skirts of *akar batu*; sometimes, however, both of these were used in conjunction.

WEAPONS.

The only weapons seen were the blow-pipe and the spear, the former was generally without decoration on its outer tube and had the spherical mouthpiece typical of Upper Perak, either of wood or gettah. The inner tube was, in the majority of cases, made of two pieces of bamboo placed end to end and joined by a short covering section of the same material. The Negritos said that they made the two-jointed tubes themselves but that they could not get bamboo internodes long enough to make a single-piece tube, and that sumpitans of this variety were purchased from the Orang Bukit (Sakai of the hill regions beyond the Perak river). All the quivers examined were typically Negrito—that is to say, they were made from a single internode of bamboo without cover of any kind, were stoppered with a plug of leaves and were carried mouth upwards in the loin-cloth. The designs on them were produced by the same method as that used for the combs. Some idea of these may be gained from the accompanying rough sketches (Pl. XV). The use of the comb patterns as charms is dealt with under another heading. The darts were all nicked about $1\frac{1}{2}$ inches from the point in order that when an animal is wounded the rest of the dart may break off and leave the poisoned end in the wound. The head of the dart below the nick is slightly thickened. In a quiver which contains both poisoned and unpoisoned darts, as well as small spatulae covered with Ipoh poison, the poisoned darts are marked on

the tops of the heads with two dots in order to distinguish them from the others. One of the men informed the writer that Ipoh juice was the only ingredient used in the poison, and warned him against handling spatulae covered with fresh poison, saying that they would set up irritation of the skin. In order to try the effect of the poison on a hen—a bird which according to the Ulu Langat aborigines is immune to its effects—one was brought and tethered to a peg on an open piece of ground. A Semang then retired to a distance and placing a dart and wad of vegetable fluff in his blow-pipe squatted down on his haunches and grasped the blowpipe with both hands close above the mouthpiece. When he discharged the dart the mouthpiece was half taken into the mouth, so that the lips, especially the top one, projected over it. The wad left the pipe with considerable force and fell some yards away on the shooter's right: the dart struck the hen in the muscles at the back of the neck on the right side. At first, except for a slight flapping of the wings, the bird, when struck, seemed scarcely to take any notice of the wound, but after a few minutes it began to look decidedly "roopy" and squatted down with feathers puffed out. It remained in this condition for about a quarter of an hour and then seemed to recover, for it began to peck about in the sand in search of food. The Semang up till this time had kept on saying that it was dying, but on its recovery they seemed astonished and remarked that a monkey when wounded with one of their darts died almost instantaneously. As the fowl showed no signs of dying, after a wait of about half an hour it was handed over to the Negritos for their supper. The bow, according to the Negritos account, though well known among them, was no longer used. They offered, however, to make one to demonstrate their knowledge of it.

MUSICAL INSTRUMENTS.

The only musical instruments observed, other than the Jew's-harps mentioned above, were bamboo flutes and a large pair of stampers of the same material. The latter were very large and gave out quite a musical sound when struck on the ground. The Jew's-harp was played by means of a cord, with a small transverse wooden handle, attached to one end of the instrument just above the base of its tongue. By holding the "harp" between the lips with the teeth kept slightly apart, and by jerking the string some not unpleasant vibrating notes can be produced. The Negritos seem to have a strongly developed taste for music, and when walking in single file through the jungle the writer has heard them keeping up a continuous rising and falling chant of considerable sweetness.

OTHER MANUFACTURES.

Loosely woven carrying baskets of rattan were common in both the encampments visited. A small conical fish trap of the kind known to the Malays as *Tengkalak onak* was found lying in the camp

above Lenggong, after it had been deserted, and also a ceremonial decoration of plaited leaves representing a kris. Pandanus baskets of various sizes for holding pinang or sireh were much used by most of the men. The old headman of the camp at Lenggong had a small bamboo box containing python fat which he said was a valuable remedy for disease.

FOOD.

Rice eked out with a little fish, game or vegetables, besides jungle fruits and various kinds of tubers, seem to form a large proportion of the Negritos' food. The rice, according to their own account, is partly grown by themselves at their encampment at Ayer Balik near Kuala Kenering. Tubers of a wild plant called *ubi kapor* are shredded previous to cooking on a piece of a rattan to which the thorn bases are left adhering. In the encampments Malay or Chinese cooking pots are used, though on journeys it is probable that they often cook in bamboo internodes, as is done by many of the aboriginal tribes. A tortoise-shell and the bones of numbers of small mammals and birds were found in the hearths of recently used rock-shelters near the limestone caves above Lenggong.

PATTERNS ON DART QUIVERS.

The method by which the Negritos produce the ornamentation on their utensils has been dealt with above, while a few remarks on the magical use of the patterns will be found under the section entitled Religion and Magic. The rough sketches of quiver patterns on Pl. XV. were made both at Lenggong and Kuala Kenering. As might be expected, all the designs are derived from objects well known to the Negritos, many of them being representations of animals, fruits, etc., which are used as food.

I and II. Two sets of patterns from one dart-quiver which have an intervening blank space between them. I, at top, II reaches to within $1\frac{1}{2}$ inches of base.

III. A block of patterns repeated four times on a quiver, with blank spaces of equal size between each block.

IV and V. Two small panels of pattern selected from among others similar to those illustrated.

VI and VII. Selection of designs from a quiver entirely covered with ornamentation. VI, patterns at top of quiver. VII, a variant of the lotong pattern found lower down on the quiver. The rest of the designs were repetitions of those shown in VI.

Note.—All heavily blackened portions, whether of pattern or back-ground, represent places where the outer skin of the bamboo has been removed and the underlying tissues darkened with *damar kelulut*, as described above. Some patterns, such as "a," are produced by merely scratching in the design and colouring it.

PATTERN NAMES IN MALAY AND ENGLISH.

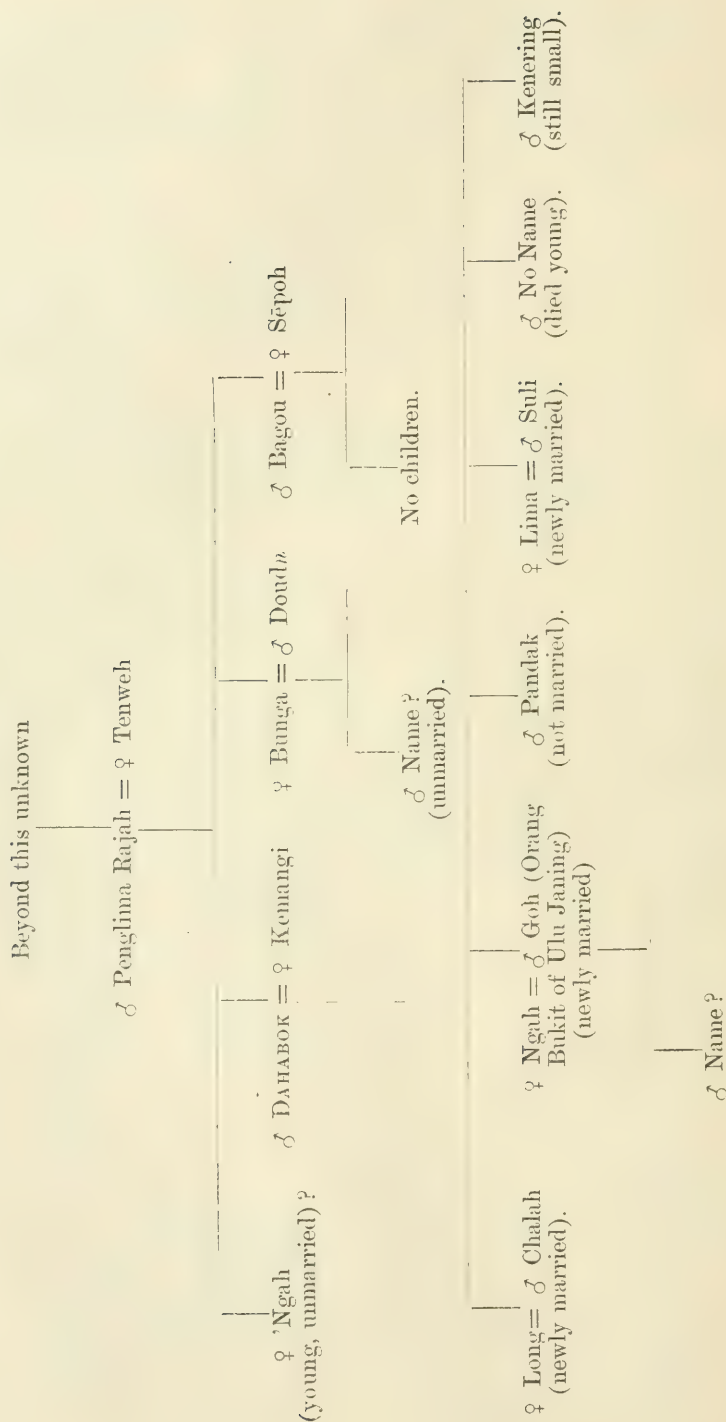
(a) Gelang	...	Bracelets;	
(b) Buah padi	...	Padi fruit;	
(c) Lengan Lotong	...	Arms of the Lotong monkey;	
(d) Mata Lotong	...	Eyes of the Lotong monkey;	
(e) Batang	...	Tree trunks;	
(f) Choban	...	Fishing line winders or netting needles;	
(g) Mata Lotong or Burong Kuang	...	Eyes of the Lotong monkey or the Argus pheasant	Two names given by different men to the same pattern.
(h) Gigi Lotong	...	Teeth of the Lotong monkey;	
(i) Lotong	...	The Lotong monkey;	
(j) Bunga timon	...	Cucumber flowers;	
(k) Biji timon	...	.. seeds.	

PERSONAL NAMES AND PEDIGRESS.

A list of personal names is given below and from these it appears that place-names, flowers, animals, with Malay words signifying eldest-born (Sulong), middle-born (Ngah) and last-born (Bongsu) are all used as proper names. In the case of the man named Sapi, he was given this style owing to his having been born at Bukit Sapi (Wild Ox Hill), a place inhabited by one section of the Negritos, but he had also another name—Goh. The short pedigree was obtained from old Dahabok, the head of the Lenggong encampment. It was impossible to obtain any names from him further back than those of his mother and father, and he even seemed doubtful about his own childrens' names until they were recalled to him by his daughter:

Name.	Meaning.	Sex.
Sapi (M) or ...	Wild ox ...	Male
Goh ...	?	...
Kenering ...	Born at K. Kenering	Male
Bunga (M) ...	Flower ...	Female
Dahabok ...	?	Male
Long (Sulong) M ...	Eldest born ...	Female
Ngah (M) ...	Second „ ...	„
Lima (M) ...	Five ...	..
Pandak (M) ...	Short (a name usually given by Malays to the 5th or 6th child)	Male
Kemangi (M)...	A tree (<i>Cinnamomum parthenoxylon</i>)	Female
Suli ...	?	Male
Tenweh ...	?	Female

PEDIGREE.



Name.	Meaning.	Sex.
Sepoh	?	Female
Bagou	?	Male
Keladi	Yam	„
Doudn	?	„
Chalah (M?) ...	?	„
Puchok	A sprout (of a tree)	„

The letter M after a name signifies that the word is Malay.

RELIGION, MAGIC, ETC.

Questions concerning religion were productive of negative answers, but a little information was obtained with regard to the significance of the Lotong monkey (Presbytes) pattern which is so constantly found on the dart quivers. This was said to aid hunters in their quest for monkeys; and probably the same kind of idea attaches to the argus pheasant design which is by no means uncommonly used (*see* Pl. XV).

A most interesting object was bought from a Negrito* at the Lenggong camp; this was small raceme of dried flowers which were said to be those of the *chenduai* plant, so famous among the Malays as a love-charm. It is mentioned in Malay romances as growing only in the most inaccessible fastnesses of the mountains, while it is said that a drop of coconut oil, in which a flower has been steeped with the recitation of appropriate formulæ, will, if placed on the skin or clothing of a women, make her fall madly in love with the possessor of the charm. The writer has recently seen similar flowers in the possession of his Malay servant and was informed by him that they were obtained from the aborigines of the Ulu Langat. The specimen from Lenggong was forwarded to Kew to be named and has been identified as *Salomonina aphylla* (Griff); several tufts of the same or a related species have recently been found growing on Gunong Kerbau.

* The people of most of the aboriginal tribes of the Peninsula are credited by the Malays with supernatural powers and skill in love-charms.

NOTES ON THE ABORIGINES OF THE ULU LANGAT AND KENABOI DISTRICTS OF SELANGOR AND JELEBU.

BY I. H. EVANS, B.A.,

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THE following ethnographical notes were made in July and August, 1912, during a fifteen days' expedition to the borders of Selangor and Jelebu. The starting point of the trip was Dusun Tua in the Ulu Langat district of Selangor, while the route taken was up the Langat river from the 19th milestone on the high road. On leaving the Langat its affluent the Pilas was followed for some little distance; then the divide, Bukit Chanchang Sebarau, lying between Gunong Itam and Gunong Hantu, climbed, and the descent made to the Kenaboi river by way of its tributary the Sungei Kring. The valley of the Kenaboi was followed down to the rest-house at Kongkoi, and from that place a three days' expedition was made to a Sakai kampong not far from the Kenaboi Hydraulic Mine. Dusuns (orchards) and other signs of Sakai occupation were extremely frequent up the Langat river and as far as the foot of the divide, and altogether three villages were passed through. Settlements of the aborigines on the Kenaboi side seem to be much less frequent and only a single village was met with in the extreme "ulu" (upper watershed). One kampong, of which all the inhabitants had gone out to work, was situated some seven or eight miles above Kongkoi, while a small party of men and women were met in the jungle on the same day.

The trip from Dusun Tua to Kongkoi occupied altogether eight days, but two were practically wasted owing to the late arrival and insufficient numbers of the Sakai coolies on the first day and the time taken in getting more men on the second. Coolies were difficult to obtain owing to the durian season being at its height.

ORIGIN OF THE PEOPLE OF THE LANGAT AND KENABOI VALLEYS.

The Sakai who live near the 24th milestone, Dusun Tua, who were my coolies as far as Kongkoi, informed me that the people of the Ulu Langat and the Ulu Kenaboi were all of one race, and this fact was confirmed by the people of the village near Kenaboi Hydraulic Mine, who recognized the names of the Dusun Tua men and told me that they were related to many of them by blood or marriage. The three vocabularies made out, as below, one in the Ulu Langat, one in the extreme Ulu Kenaboi, and one near the Hydraulic Mine seem to afford proof of the same thing. The Langat Sakai acknowledge the names of Blandas, Orang Bukit or Sakai Tanjong, but seem to have a preference for the latter. The legends concerning the origin of the peoples which were obtained on either

side of the divide would appear to indicate a race mixture. The Dusun Tua men had a story that they had been driven up into the hills by Rawa and Mendiling Malays, by whom they had always been ill treated, but to whose oppression the final touches were put owing to the Sakais obtaining a magnificent pair of elephant tusks. The greed of the Rawa and Mendiling warriors being aroused on hearing of this acquisition they tried to force the Sakai to give the tusks up. The latter however replied that they intended to give them to the Toh Klana of Sungei Ujong, whom they regarded as their chief. The Rawa and Mendiling people thereupon declared that if they were not given up they would make war both upon the Sakai and the Toh Klana. In the fight which ensued the Sakais got much the worst of it and ran away to the hills, where they have remained ever since. The story obtained from the settlement near the Kenaboi Mine was somewhat different. It was as follows: "Our people came over from Pahang owing to trouble with the Malays. When we arrived here there were only a few Sakai in the country. These were the true Orang Bukit (hill people). They had been very much reduced in numbers by the Malays, who killed them and stole their children to sell as slaves. With this remainder of the Orang Bukit we intermarried. There are now only two or three people of pure Orang Bukit blood left." One youth, 16 or 17 years of age, was pointed out as having an Orang Bukit mother, but there were said to be no full bloods in the village at the time. Orang Bukit is the term generally applied by the Malays of the Peninsula to all aborigines who live in hilly districts. A legend was obtained from Dusun Tua Sakai that their forefathers had come from Menangkabau to Johore, crossing the sea on a banana plant trunk (batang pisang).

TRIBAL ORGANIZATION.

The head of each section of the Blandas is the Batin, who is helped by various sub-officers. The Batinship in the Ulu Kenaboi is said to be at present in abeyance. The following is a list of the four chief officers which I obtained from the Batin of the people at the 24th mile, Dusun Tua:

(1) Batin	|	(3) Jukrah
(2) Jinang	|	(4) Penglima Garang

The Batin is the supreme authority and from his decision there is no appeal. When a case with which he is not able to deal is brought before a subordinate officer he turns it over to the officer next above him, and he may pass it on again until it reaches the Batin.

The Penghulu Balei is a subordinate officer who presides at feasts.

There are also said to be a Penghulu Muda, whose duties do not seem to be well defined; and a Penghulu Dagang, who looks after strangers.

The Pawangs or medicine men, called by these people Poyangs, may perhaps also be classed as tribal officers. Their duties are doctoring sick persons, taking the "semangat padi" (rice soul) among the people who plant wet padi, and performing various shamanistic rites.

Among the Ulu Langat people the Batin regalia are said to consist of a kris and a silk head-cloth.

The Langat Batinship descends in the female line—i.e., to the son of the Batin's eldest sister.

TYPES OF HOUSES AND SHELTERS.

The permanent dwellings observed were of two forms, one raised from the ground on posts and having a central roof-beam with an atap roof sloping away from it on either side so that it resembles the ordinary Malay type of house in its exterior, the other slightly, if at all, raised from the ground, with a plain sloping type of roof lacking any central roof-beam. Temporary shelters were of three kinds, the first a structure with a sloping roof resembling that of the simpler type of house; the second a beehive-shaped hut made of bertam or other large leaves, the proximal ends of the leaf petioles being planted in the ground. A small circular opening which serves as a doorway is left in one side of the beehive, and this has to be entered on hands and knees or in a stooping position. The third type of temporary shelter is the wind or rain screen, consisting of large leaves planted with the bases of the petioles in the ground which often lean at a slight angle from the perpendicular so as to afford better protection to the occupants. The ground plan of a shelter of this kind may be either a straight line or a semicircle. Huts of this third variety are never used for more than a night or so, but those of the two other types appear occasionally to become temporarily permanent.

MEDICINE HUTS.

A very fine example of the Pawang's medicine hut was seen in the jungle in the Ulu Langat. It consisted of a beehive hut of bertam leaves with a crawl-in entrance, erected on a bamboo platform so as to leave a small verandah in front. On this verandah were lying several bamboo stampers. Inside the hut, which had been abandoned, was suspended a tray of plaited bamboo decorated with hangings of fibre and bands of pandan leaf decorations called "*tagak*"* or "*jari lipan*," bunches of "*dau lebar*" (? lit., broad leaves) and plaited ornaments known as *subang* (ear-rings). On the floor was a grass whisk which the Pawang holds in his right hand and swishes backwards and forwards when calling the spirits. The Sakai coolies remarked that only a big Pawang would have his hut so far from the village. Subsequently, other Pawangs' huts were seen both in the Ulu Langat and also near the Kenaboi Mine, but in these cases

* Probably *tajak* to which Wilkinson assigns the meaning "aigrette."

an incomplete bee-hive of bertam leaves had been erected within an ordinary hut of the village. The decorations in these bee-hives were of the same type as those seen in the jungle.

AGRICULTURE.

The aborigines around Dusun Tua and also near Kongkoi cultivate wet padi and, as mentioned above, perform the "semangat padi ceremonies"; the people of the extreme "ulus," both of the Langat and Kenaboi, have their clearings planted with kaladi, keledak, ubi kayu and a little Indian corn. Tobacco is also grown in small quantities for home consumption.

QUAIL TRAP.

An example of a peculiar kind of trap for quail (burong sioul) was observed in the Ulu Langat. It appears that the quail come to eat the fruit which falls from a tree called "unang," and the Sakais knowing this set up a trap consisting of a long tapering basket of rattan, whose mouth is enclosed in a fence or screen of green branches facing towards the place where the fallen fruit is lying. A bee-hive hut of bertam leaves is then built not far from the trunk of the tree. A cord, one end of which is led into the hut, runs behind the quails' feeding ground and is attached at its other end to the base of a small tree. A man conceals himself in the hut, and when the quail come to feed, jerks the cord up and down; the quail, making for cover, see in the mouth of the trap a convenient hole shaded by bushes and run into it.

WEAPONS.

BLOW-PIPES.

The blow-pipes collected or seen on the expedition were all of the same type, having a conical wooden mouthpiece and an inner tube composed of two pieces of bamboo placed end to end and joined by a covering section of the same material. The muzzles are bound with rattan and covered with damar. A large part of the outer tube nearest the mouthpiece is decorated with circular and other designs; above this is a plain polished portion from which the outer skin of the bamboo has been removed, and between this and the damar covered muzzle is a small length covered with patterns. These patterns were said not to be representations of anything in particular but to be merely decorations.

QUIVER AND DARTS.

Four types of quiver were found on the Kenaboi side of the divide. One bought in the extreme "ulu" had a conical cover of plaited rattan, the sides of which are concave. The other three types were all seen in the settlement near the Kenaboi Mine. One quiver had a cap of the usual three sided, Selangor type; of the other

two, one had a conical wooden cover with rattan sides similar to those used by the Besisi, and the other a flat topped cover of plaited rattan with a button in the centre. A rectangular panel, such as is generally found among the Mantra, had been incised on the body of this quiver below the place of attachment of the waist cords. It was, moreover, interesting as it contained two porcupine quills which were used as charms to make the darts fly true and some pieces of monkey's fur which were considered potent in attracting monkeys to the hunter. The quivers were all said to be locally manufactured, the type with the three-sided cover being made by the women, and the other types by the men. Two varieties of dart head were seen, one plain, the other marked with a cross. The poison on the darts marked with a cross was said to be the stronger of the two.

IPOH POISON.

The people living near the Kenaboi Mine use a dart poison composed of a mixture of Ipoh sap, *getah rotan* and the sap of a tree called *kayas*. Fowls and pigs are reported to be immune to pure Ipoh poison, but Ipoh mixed with *getah rotan* is said to prove fatal.

TATTOOING.

True tattoo marks were noticed on the arms of several men, both in the Langat and Kenaboi valleys. Careful enquiries were made with regard to the origin of this practice, and the Sakai all seemed to agree that it was a newly introduced custom, which had probably been borrowed from the Chinese. One man seen in the Ulu Langat had a distinct swastika mark on the inside of the left forearm and a floral design above the elbow on the same arm. If this custom is new it must be spreading rather rapidly for a considerable amount of tattooing is also to be seen among the Besisi of Tamboh in Selangor.

DRESS AND PERSONAL ORNAMENTS.

Many of the men seen were wearing only a waist-cloth. This was either of European stuff or of the native bark cloth. Armlets of plaited rattan were fashionable among the men and were often decorated with sprigs of sweet scented leaves. Several tortoise-shell finger rings were collected in the Ulu Langat and some fine necklaces of shaped and polished monkey-bones in the village near the Kenaboi Mine. Necklets and bracelets of "urat batu," the rhizomorph of a fungus, were much worn by the women on both sides of the divide. These necklaces are regarded as a charm against "*hujan panas*" (light showers alternating with periods of sunshine like "April showers" at home) which is much disliked and feared by the aborigines. A small ear plug of red wood and a hair-skewer of the same material were procured from a woman in the Ulu Kenaboi. Necklaces of threaded white seeds and small pieces of wood were also obtained, together with other more hackneyed objects.

MUSICAL INSTRUMENTS.

The only musical instruments seen were flutes, bamboo stampers and the Æolian bamboo. The last named were common in the village near the Kenaboi Mine. Measurements by finger breadth are used in making the stops of a flute. In an example with three stops which was obtained, the second stop was two finger breadths above the lowest and the third four finger breadths from the second.

LANGUAGE.

The language used by all the aborigines met with was Malay interspersed with a few non-Malay elements. The pronunciation and intonation were somewhat rough and final k's were sounded. The vocabularies obtained from these people both in the Ulu Langat and Ulu Kenaboi are practically indetical † and seem on the evidence of such words as are non-Malay to belong to the Mantra group of dialects. Examples of non-Malay or archaic words are given below :

English.	Malay.	Vocabulary taken in Ulu Langat.	Vocabulary from far Ulu Kenaboi.	Vocabulary from near Kenaboi. Mine.
Mother	... ibu	... mui	... moie	... mui
Child	... anak	... enek	...	... enek
Elder brother	... abang	... ge-hek	...	... ge-hek
Elder sister	... kakak	... gah-uk	...	... gah-u
Wild pig	... babi utan	... mantol	...	... mantol
Bear cat	... benturong	... mawai	...	... maweit
Loris	... kongkang	... kukang	...	... kukang
Gibbon	... ungka	... timok (k pronounced)	...	... timok
Owl	... burung hantu...	...	...	bongkungu, tekok
Crow	... burung gagak...	... burung den-dang *	...	...
Millipede	... sepat bulan	... kalui	...	... kalui
Mosquito	... nyamok	... kemus	...	... kemus
Tapioca	... ubi kayu	... galoh	...	... galow
Yam	... keledak	... tilah	...	... tilah
Snore	... berdengkur	... sengkok	...	...
Jump	... melompat	... mehamu	...	...
Throw	... lontar	... lutar	...	...

* Stands for Malay word used.

† The second vocabulary was obtained from a stupid and suspicious native at whose house a half-hour's halt was made. It is probably very incomplete.

English.	Malay.	Vocabulary taken in Ulu Langat.	Vocabulary from far Ulu Kenaboi.	Vocabulary from near Kenaboi Mine.
Hut	... pondok	... punong	... *	...
Blowpipe	... sumpitan	... temiang *	... temiang *	temiang*
Mouthpiece of blowpipe	pangkal sumpi- tan	tebong-temi- ang	t e b o n g - temiang	tebong- temiang
Quiver for blow- arrows	tabong beka s damak	telak	... simpai (?)	t e l a k damak
Quiver cords	... tali tabong	... tali telak	... tali tem- baran (?)	tali telak
Butt of dart	... pangkal damak	pahabong	... *	... p a h a - bong
Dart-holder	... sarong damak	plet	... plet	... plet
Muzzle	... ujung sumpitan	*	... sengkak temiang	g e l o i temiang
Finger nail	... kuku	...	...	... kokut
Diarrhoea	... cheret	...	...	... remoin
Cough	... batuk	...	...	... gahi
Wife	... bini	...	...	... oie
Tapir	... tenok	...	...	... j e l a u (jungle pantang langu- a g e)
Flying-lizard	... chichak kubin	*	...	... c h i n g - kuai
To scratch	... garu	... garu-i	...	... koweit
Thunder	... guroh	...	...	... grentah

HEAD MEASUREMENTS.

Length.	Breadth.	Cephalic index.
(1) 176 ...	138 ...	78.4 Ulu Langat
(2) 179 ...	143 ...	79.8 „
(3) 176 ...	148 ...	84.0 „
(4) 180 ...	132 ...	73.3 „
(5) 183 ...	142 ...	77.5 „
(6) 177 ...	146 ...	82.4 Far Ulu Kenaboi
Greatest cephalic index	...	... 84.0
Least	„	... 73.3
Average	„	... 79.2

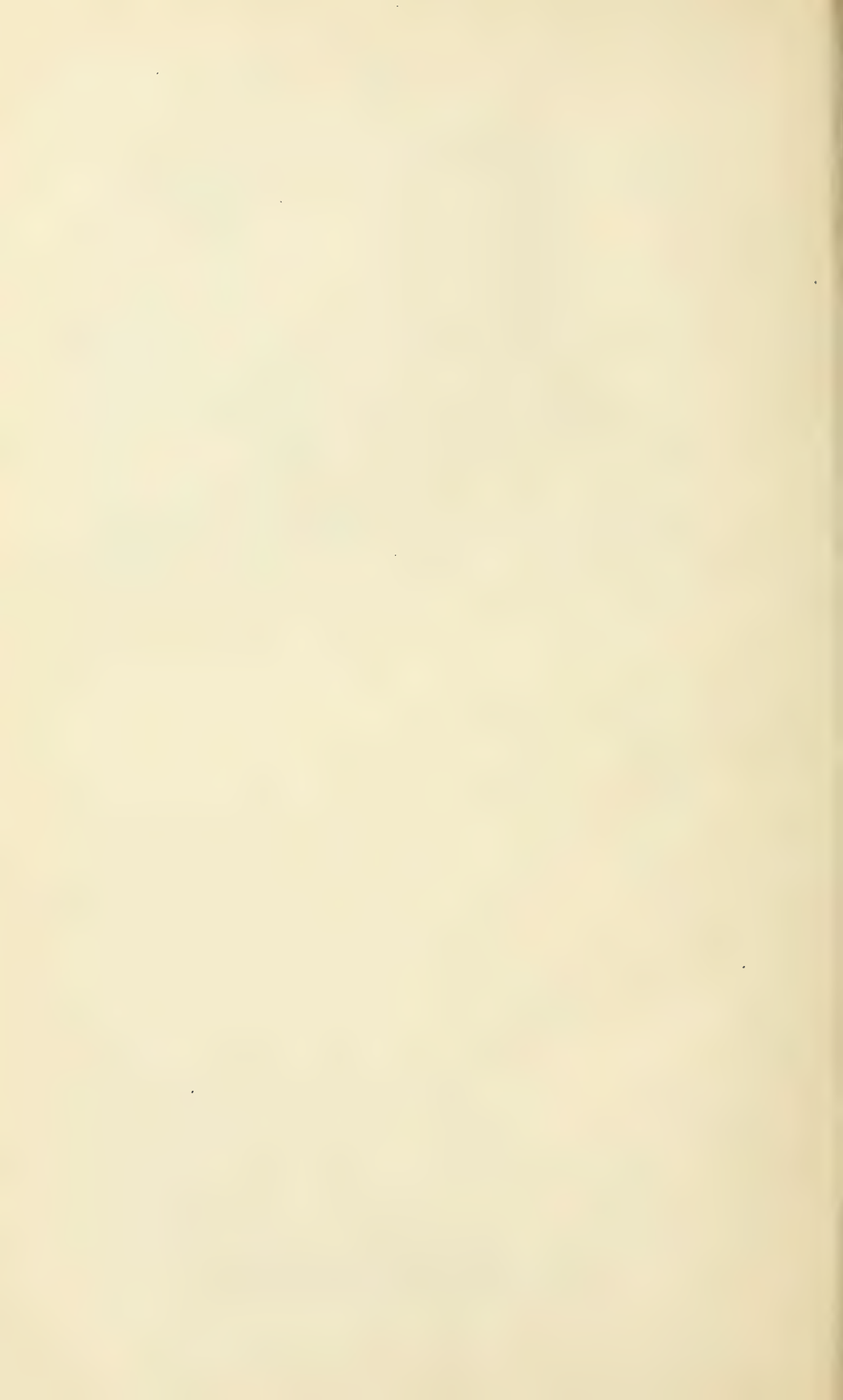
* Stands for Malay word used.

NASAL MEASUREMENTS.

Length.		Breadth.		Nasal index.	
(1)	49	...	39	...	82.9
(2)	43	...	39	...	90.6
(3)	44	...	40	...	90.9
(4)	49	...	35	...	71.4
(5)	47	...	47	...	99.9

The measurements taken were so few that it would be unfair to draw any very definite conclusions from them, but in so far as they go they do not seem inconsistent with the aborigines' story of their mixed origin; for in a very small series there is a large degree of variation, ranging in the cephalic indices from marked brachycephaly to equally marked dolicocephaly.

Selangor, lying as it does, between Southern Perak with its almost pure blooded Sakai and Negri Sembilan with its proto-Malays (Mantra, Biduanda, etc.) is undoubtedly occupied by many aboriginal tribes of mixed blood of which the people of the Langat and Kenaboi rivers are probably one.



ON A COLLECTION OF BIRDS FROM THE SIAMESE
PROVINCE OF BANDON, N.E. MALAY PENINSULA.

BY H. C. ROBINSON, C.M.Z.S., M.B.O.U.

THE province of Bandon, with which the present paper is concerned, is situated on the eastern side of the Malay Peninsula, between long. $98^{\circ} 30'$ and $99^{\circ} 40'$ E., and lat. $9^{\circ} 10'$ and $8^{\circ} 30'$ N. It is bounded on the south and east by the province of Nakon Sitamarat, on the west by Takopah and on the north by Chaiya. As yet it is comparatively little developed though the Siamese Bangkok-Singapore Railway, which traverses its eastern districts, will do much to remedy this. At present its principal production is timber, of which large quantities are cut in the forests to the west of the province, floated down the Bandon river, which is one of the most navigable in the Malay Peninsula, and dealt with by a large and well equipped saw mill at Bandon town, the cut timber being mainly utilized at Bangkok but exported also to Kelantan, Trengganu and Singapore and even to Europe. A little tin is also produced and a small amount of wolfram from a mine on the coast, but the mineral output is as yet insignificant.

The population is exclusively Siamese or at least Siamese speaking, though on the coast there is a slight admixture of Malay blood which is more pronounced on the coast of Chaiya, to the north among the fishing population.

The coast, except on the south-east where it is rocky with a sandy beach, is low and mangrove grown, succeeded towards the interior by a belt of sandy barren land overgrown in places by *Melastoma* scrub and in others by stretches of *gelam* (*Melaleuca leucodendron*).

At the base of the hills stretches a large area of very fertile land occupied by villages and rice fields but the province, as a whole, is stated to be sparsely inhabited as compared with its southern neighbour Nakon Sitamarat. Roads are as yet in a backward condition, but their lack is in large part supplied by the Bandon river, which except in the dry season is navigable for steam launches for nearly a hundred miles from its mouth, which unfortunately is blocked by a very broad and very shallow bar, not carrying more than six or seven feet of water at any tide.

The only considerable town is Bandon, about three or four miles from the mouth of the river, a thriving little place of apparently about six or seven thousand inhabitants with a large number of Siamese and Chinese shops, a detachment of the provincial *gendarmerie* and a considerable number of officials.

The birds collected in the province of Bandon, with the exception of perhaps half a dozen specimens obtained *en route*, were all secured in three localities regarding which it may perhaps be of interest to give some particulars.

1. BAN KOK Klap.

A large hamlet in the amphur of Lampun on the banks of the river of that name, which is a fair sized tributary of the Bandon river, the village is about four miles to the west of the main line of the Bangkok-Singapore Railway, which has a station at Lampun and on which ballast trains were already running at the time of our visit.

The village is situated at the foot of the range of hills running about N.W. to S.E., which in their northern part separate the province of Bandon from that of Nakon Sitamarat, attaining a maximum elevation of slightly over 4,200 feet in Kao Nawng.

The population in the neighbourhood of Ban Kok Klap was considerable; there was much cultivated land, orchards in which betel palms, mango, langsat and coconut palms were the principal fruit trees, large tracts of rice and patches of Indian corn and hill padi. Much destruction of jungle has taken place for these last two products, the abandoned land growing up in bamboo and secondary growth amongst which a species of stinging shrub was very common.

To the north and east of the village were several limestone hills, of the type usual in the Malay Peninsula, all of them much fissured and shattered, though no caves of any considerable extent seem to occur in them.

The fauna was not of any special interest being very similar to that found in Trang on the other side of the main range.

In the rice fields, wood-duck, tree-teal and wattled plovers were very common and an occasional pea-fowl was met with, though these are much more abundant when the padi is in ear, the rice fields being in stubble at the time of our visit.

In the orchard lands hill-mynas (*Eulabes*), glossy starlings (*Calornis*), pied hornbills (*Anthracoceros*) and several species of woodpecker were the most noticeable birds, while in the bamboo thickets jungle partidges (*Caloperdix* and *Tropicoperdix*) were very abundant but were almost impossible to obtain owing to a long continued drought having so dried up the dead leaves underfoot that, even for a Dyak, a noiseless approach was out of the question.

We collected at Ban Kok Klap from 29th June to 6th July, 1913.

2. KAO NAWNG (lower camp).

This was situated on the upper reaches of the river flowing past Ban Kok Klap, probably about fifteen miles distant from that place at a height above sea-level of about 1,200 feet and quite close to the divide leading down to Nakon Sitamarat.

Owing partly to an actual scarcity of elephants and partly to the reluctance of the owners to use them for transport purposes on the plea that this damages their efficiency for timber hauling, which is their principal use, we had to rely in the main on coolies.

Though quite willing, the local Siamese were extraordinarily inefficient as jungle carriers, and all loads other than those of the most trifling weight had to be carried slung on a pole between two men.

After about the first five miles, when the primary jungle was entered, there was practically no path, the track taken being along the banks of the river itself, which in places was deep and rapid and had to be crossed between thirty and forty times. Under these circumstances progress was slow, and though our impedimenta were reduced to a minimum and there was no lack of coolies we did not arrive at our destination until the afternoon of the second day, though, as stated above, the total distance traversed could not have been more than fifteen miles. Owing to the rocky and broken nature of the country there was some difficulty in finding a suitable site for a camp, which was enhanced by the fact that there were no suitable palm leaves for roofing purposes, banana leaves, which are very perishable and unsatisfactory, having to be used.

During our stay on the mountain, which lasted from 11th June to 28th June, the weather was very unfavourable. There was always a strong wind, and rain, though at no time heavy, was almost continuous after about 10 a.m. Birds and animals were by no means numerous.

3. KAO NAWNG (upper camp).

During our stay on the mountain a party was detached for work at higher elevations and a camp was established at about 3,500 feet, a few hundred feet below the extreme summit of the range, in a saddle between two peaks. The weather was extremely wet and windy, the collecting ground very limited in extent, owing to the steepness of the mountain, and covered with very dense and matted vegetation, and the results were therefore not large, though several very interesting species both of birds and mammals were obtained.

The principal object in collecting on these hills which have never previously been visited by a naturalist was to ascertain what relationship their fauna bore to that of the main peninsular range to south and to that of the Tenasserim mountain Nwalabo and Muleyit to the north.

As might be expected, the present collections show that the fauna is almost exactly intermediate, so much so that in many cases it is difficult to state whether a specimen should be assigned to the Tenasserim or the Malayan race, when these have been separated. The area of these hills above the 3,000 feet and 4,000 feet contours is

however so small that the mountain fauna is correspondingly limited and it is therefore not safe to draw any deductions from the absence or presence of particular species.

Many forms strictly confined to the zone above 3,000 feet in the south of the Malay Peninsula here occur at elevation of 1,000 feet or under while certain species such as *Cyanops oorti* and *Oriolus consanguineus* of insular facies, common everywhere in the hills of Selangor and Perak, are not met with on Kao Nawng and presumably do not occur.

The following species not hitherto recorded from the Malay Peninsula were collected:

Pseudotantalus leucocephalus (Penn.);

Cyanops davisoni (Hume);

Anthipes submoniliger, Hume;

Anthipes olivacea (Hume);

Cryptolopha youngi, sp. nov.;

Thringorhina guttata (Tick.);

Pnoepyga pusilla, Hodgs.;

Æthopyga sanguinipectus, Wald.

Without the active co-operation of the local authorities jungle travel in the Siamese portions of the Malay Peninsula is practically impossible to a stranger. Our most hearty thanks are therefore due, in the first place to H.R.H. Prince Damrong, Minister of the Interior, Siam, who provided us with the necessary introductions, and in the second to the Acting Governor of Bandon and to the amphurr* of Lampum, who treated us most courteously and took an infinity of trouble in securing the large amount of transport that we required. Without their aid we should have been tied to the line of the railway and would have obtained no results of any particular interest.

PHASIANIDÆ.

1. ARBORICOLA CHARLTONI.

Arboricola charltoni (Eyton); Ogilvie Grant, Cat. Birds Brit. Mus., xxii., p. 221 (1893); Robinson, Journ. Fed. Malay States Mus., v., p. 15 (1913).

These jungle partridges are apparently fairly common in the north of the Peninsula, though they are extremely rare south of the latitude of Taiping in central Perak. Near Ban Kok Klap they were very numerous in dry jungle but very wary and almost impossible to approach. Mr. Seimund, who obtained one specimen, describes the note as a soft low double whistle. The small native boys occasionally shoot them with pellet bows. They make excellent eating.

* An official corresponding to the District Officer in the Federated Malay States.

"Male, iris dark hazel, bill blackish, yellowish green at tip of lower mandible, reddish at base, orbital skin reddish orange, tarsi and claws waxy yellow."

ROLLULUS ROULROUL.

Rollulus roulroul (Scop.); Ogilvie Grant, tom. cit., p. 225.

Several crested wood quail, which is the commonest game-bird in the jungles of the Malay Peninsula, were shot on Kao Nawng but were consigned to the pot as they were in very poor feather.

2. CALOPERDIX OCULEA.

Caloperdix oculatea (Tömm.); Ogilvie Grant, tom. cit., p. 222; Robinson and Kloss, Ibis, 1910, p. 671; Robinson, Journ. Fed. Malay States Mus., v., p. 15 (1913).

Evidently very common in Bandon, though we did not ourselves procure specimens. Caged birds were frequently seen in the possession of the local Siamese and a male, recently caught, was purchased at Ban Kok Klap.

GALLUS GALLUS.

Gallus gallus (Linn.); Grant, tom. cit., p. 344.

Gallus bankiva, Robinson and Kloss, tom. cit., p. 673.

Jungle fowl were very numerous in the vicinity of Ban Kok Klap and along the banks of the river, south of that place. No specimens were however preserved. The hens of the local domestic fowl were almost indistinguishable from wild birds.

3. ARGUSIANUS ARGUS.

Argusianus argus (Linn.); Ogilvie Grant, tom. cit., p. 363.

Very numerous on Kao Nawng and not so shy as in many other places though they are much trapped by Siamese as the skins command a good price among the Chinese on the coast. We had not the time to set snares and did not particularly desire specimens, but one female was obtained and one or two males approached and shot at by Seimund. Argus pheasants are poor eating being usually very thin and dry and are not to be compared with peafowl.

4. PAVO MUTICUS.

Pavo muticus, Linn.; Ogilvie Grant, tom. cit., p. 371; Robinson and Kloss, tom. cit., p. 672.

Peafowl were fairly common round the edges of the rice fields at Ban Kok Klap, and two or three were shot for food but not preserved. They were in very poor feather, without trains, which in this district are not assumed until November or December.

TRERONIDÆ.

OSMOTRERON VERNANS.

Osmotreron vernans (Linn.); Salvad., Cat. Birds Brit. Mus., xxi., p. 60 (1893); Robinson and Kloss, tom. cit., p. 674.

One or two specimens of the common green pigeon were shot but not preserved.

COLUMBIDÆ.

TURTUR TIGRINUS.

Turtur tigrinus (Temm. and Knip); Salvad., tom. cit., p. 440; Robinson and Kloss, tom. cit., p. 675.

Exceedingly numerous on the rice stubbles at Ban Kok Klap, in flocks sometimes numbering as many as twenty individuals. No specimens were preserved.

5. CHALCOPHAPS INDICA.

Chalcophaps indica (Linn.); Salvad., tom. cit., p. 514; Robinson and Kloss, tom. cit., p. 675.

Very common as everywhere else in the Peninsula.

CHARADRIIDÆ.

SARCOGRAMMUS ATRINUCHALIS.

Sarcogrammus atrinuchalis, Jerdon; Sharpe, Cat. Birds Brit. Mus., xxiv., p. 152 (1896); Robinson and Kloss, Ibis, 1911, p. 11.

Also very common on the rice fields.

RALLIDÆ.

6. RALLINA FASCIATA.

Rallina fasciata (Raffles); Sharpe, Cat. Birds Brit. Mus., xxiii., p. 75 (1894).

This rail was fairly common at Ban Kok Klap at the edges of the rice fields but only a single male was obtained.

"Iris orange, periocular skin carmine bill greenish horn, blackish on culmen, carmine at base, feet carmine."

CICONIIDÆ.

DISSURA EPISCOPUS.

Dissura episcopus (Bodd.); Sharpe, Cat. Birds Brit. Mus., xxvi., p. 294 (1898); Robinson and Kloss, tom. cit., p. 16.

Common on the rice fields, roosting at night on lofty dead trees at the edge of the jungle.

7. PSEUDOTANTALUS LEUCOCEPHALUS.

Pseudotantalus leucocephalus (Penn.); Sharpe, tom. cit., p. 323.

This is a new record for the Malay Peninsula, though the Museum possesses three specimens collected on Langkawi in December, 1912, and an immature bird shot near Kuala Lumpur in 1911, which was wrongly identified with *Pseudotantalus lacteus*.

In Bandon the species was very common but excessively wary and hard to obtain. It was seen either singly or in small numbers on the rice fields but collected in large flocks towards evening and roosted on lofty trees in company with *Dissura episcopus* and *Graptocephalus davisoni*. In the south of the Peninsula it is replaced by *Ps. lacteus*, which, however, appears to be almost exclusively a marine species.

IBIDIDÆ.

8. IBIS MELANOCEPHALA.

Ibis melanocephala (Lath.); Sharpe, Cat. Birds Brit. Mus., xxvi., p. 8 (1898).

Seimund obtained one specimen out of a large flock feeding on the mud-flats at the mouth of the Bandon river. The species is by no means scarce in the Malay Peninsula but is always very wary and difficult to obtain.

9. GRAPTOCEPHALUS DAVISONI.

Graptocephalus davisoni (Hume); Sharpe, tom. cit., p. 14 (1898); Robinson and Kloss, tom. cit., p. 17.

One male was shot out of a flock roosting on a very lofty tree on the banks of the Bandon river.

ARDEIDÆ.

10. HERODIAS ALBA.

Herodias alba (Linn.); Sharpe, Cat. Birds Brit. Mus., xxvi., p. 90 (1898).

Seimund shot a male from out of a large flock at Bandon on 4th June. The bird is moulting into breeding plumage and the ornamental train is beginning to appear but the feet are dull black and the bill uniform chrome yellow as in the winter plumage. Like other specimens from the Malay Peninsula the size is very small, the dimensions being, wing 12.1, culmen, 4.1 and tarsus, 5.6 inches.

ANATIDÆ.

11. ASARCORNIS LEUCOPTERA.

Asarcornis scutulata (part.) Salvad., Cat. Birds Brit. Mus., xxvii., p. 60 (1895).

Asarcornis leucoptera (Blyth); Robinson and Kloss, tom. cit., p. 19.

Fairly common on the rice fields upcountry in Bandon and almost down to the coast, generally in pairs but sometimes in larger numbers. A male was shot at Ban Kok Klap.

12. DENDROCYCNA JAVANICA.

Dendrocygna javanica (Horsf.); Salvad., tom. cit., p. 156; Robinson and Kloss, tom. cit., p. 21.

Very common in flock of considerable size but rather wild as they are much shot at by the Siamese.

FALCONIDÆ.

13. LOPHOSPIZIAS TRIVIRGATUS.

Astur trivirgatus (Temm.); Sharpe, Cat. Birds Brit. Mus., i., p. 105 (1874).

An immature male, though in very worn plumage with the primaries abraded, has the wing slightly over 9 inches and would therefore appear to belong to the Himalayan and Assamese race. *A. rufitinctus* (McClell.). Specimens from the more southern parts of the Peninsula are decidedly smaller.

"Iris lemon orange, feet chrome yellow."

14. SPILORNIS PALLIDUS.

Spilornis pallidus, Walden; Sharpe, tom. cit., p. 290, pl. ix; Robinson and Kloss, tom. cit., p. 23.

A male from Ban Kok Klap, wing about 14.8 in.

15. MICROHIERAX FRINGILLARIUS.

Microhierax fringillarius (Drap.); Sharpe, tom. cit., p. 367; Robinson and Kloss, tom. cit., p. 24.

One male from Ban Kok Klap.

16. MACHÆRAMPHUS ALCINUS.

Machæramphus alcinus (Westerm.); Sharpe, tom. cit., p. 408.

Coming down stream from Ban Kok Klap we met with two pairs of this rare kite, and Seimund shot a male. They were nesting high up in very lofty trees from which the natives extract dammar (*Dipterocarpus crinitus*) and when disturbed seemed half dazed by the light and flew comparatively slowly.

We were unfortunately unable to spare the time to attempt to secure the eggs. Normally these hawks are crepuscular in their habits feeding on bats and are of very rapid and powerful flight. The species is widely spread throughout the Peninsula and at one time was not uncommon in the vicinity of Kuala Lumpur.

PANDIONIDÆ.

17. POLIOÆTUS HUMILIS.

Polioætus humilis (Müll. and Schleg.); Sharpe, tom. cit., p. 454.

The smaller grey-headed fishing eagle is confined to the upper reaches of the rivers and to jungle country and is not found on the coast or in open country. A female was shot coming down stream from Ban Kok Klap on the Bandon river.

STRIGIDÆ.

18. KETUPA CEYLONENSIS.

Ketupa ceylonensis (Gm.); Sharpe, Cat. Birds Brit. Mus., ii., p. 4 (1875); Robinson and Kloss, tom. cit., p. 30.

Not so common as the succeeding species. One specimen was secured near Ban Kok Klap.

19. KETUPA JAVANENSIS.

Ketupa javanensis (Less.); Sharpe, tom. cit., p. 8; Robinson and Kloss, tom. cit., p. 30.

Very common throughout the Peninsula, wherever there are extensive rice fields.

20. GLAUCIDIUM BRODIEI.

Glaucidium brodiei (Burton); Sharpe, tom. cit., p. 212.

A female, precisely agreeing with specimens from the hills of South Perak and Selangor, was obtained at between 3,000 feet and 4,000 feet on Kao Nawng.

21. SCOPS LEMPIJI.

Scops lempiji (Horsf.); Sharpe, tom. cit., p. 91; Robinson and Kloss, tom. cit., p. 31.

A female from Ban Kok Klap.

22. HETEROSCOPI VULPES.

Pisorhina luciae, Hartert, Nov. Zool., ix., p. 541 (1902).

Heteroscopus vulpes, Ogilvie Grant, Bull. B.O.C., xix., p. 11 (1906); Id. Journ. Fed. Malay States Mus., iii., p. 51, pl. iii (1908).

An adult female from 3,500 feet on Kao Nawng.

Compared with four skins from Selangor and Perak this specimen is much more uniform foxy brown above with the black markings much reduced in amount. Below, it is paler in tint, vinaceous brown with the middle of the abdomen and the under tail-coverts almost pure white. The differences are quite striking but in so very variable a group as the scops owls it is not advisable to describe a new species on a single individual only.

PSITTACIDÆ.

23. LORICULUS VERNALIS.

Loriculus vernalis (Sparrm.); Salvad., Cat. Birds Brit. Mus., xx., p. 517 (1891); Robinson and Kloss, tom. cit., p. 32.

Three females from Ban Kok Klap.

"Iris white, bill orange, feet lemon orange."

ALCEDINIDÆ.

24. ALCEDO EURYZONA.

Alcedo euryzona, Temm.; Sharpe, Cat. Birds Brit. Mus., xvii., p. 158 (1892); Robinson and Kloss, tom. cit., p. 33.

Quite common in those parts of Bandon visited by us wherever running water and jungle occur but most abundant on the lower slopes of the mountains. The birds are very shy and restless, never staying long in one place, but we procured four specimens, two males and two females, near the lower camp on Kao Nawng.

"Male, iris dark hazel, bill black, the tip white, feet pale flesh. Female, bill blackish, reddish brown at the base of the lower mandible with the tip whitish."

25. CEYX EUERYTHRA.

Ceyx euerythra, Sharpe, tom. cit., p. 179; Robinson and Kloss, tom. cit., p. 33.

Not very common; we only procured one specimen at Ban Kok Klap.

26. CARCINEUTES PULCHELLUS.

Carcineutes pulchellus (Horsf.); Sharpe, tom. cit., p. 198; Robinson and Kloss, tom. cit., p. 34.

A female from Kao Nawng and a male from Ban Kok Klap.

"Male, iris hazel, bill vermilion, feet orange brown."

27. HALCYON SMYRNENSIS.

Halcyon smyrnensis (Linn.); Sharpe, tom. cit., p. 222; Robinson and Kloss, tom. cit., p. 34.

Common everywhere in the rice fields.

MEROPIDÆ.

28. MELITTOPHAGUS SWINHOII.

Melittophagus swinhoii (Hume); Sharpe, Cat. Birds Brit. Mus., xvii., p. 55 (1892); Robinson and Kloss, op. cit., p. 36.

Common in open country throughout the district traversed.

29. MEROPS SUMATRANUS.

Merops sumatranus, Raffles; Sharpe, tom. cit., p. 61; Robinson and Kloss, p. 37.

In similar situations to the preceding but not so common. An immature female with the top of the head uniform in colour with the mantle was obtained at Bandon on 10th July.

30. NYCTIORNIS AMICTA.

Nyctiornis amicta (Temm.); Sharpe, tom. cit., p. 90; Robinson and Kloss, p. 37.

Perhaps not so common as in the more southern parts of the Peninsula, though it was seen on Kao Nawng up to about 2,000 feet and obtained at Ban Kok Klap and Bandon.

TROGONIDÆ.

31. PYROTROGON ORESCIUS.

Harpactes orescius (Temm.); Ogilvie Grant, Cat. Birds Brit. Mus., xvii., p. 494 (1892).

Pyrotrogon orescius, Robinson and Kloss, tom. cit., p. 39.

Fairly common near Ban Kok Klap, whence four specimens were obtained. Our Dyaks however always rather shirk shooting both this and other species of the genus, partly from the fact that they are omen birds and therefore unlucky to kill but principally for the more material reason that they are exceedingly troublesome to skin.

CUCULIDÆ.

32. HIEROCOCCYX NISICOLOR.

Hierococcyx fugax (Horsf.); Shelley, Cat. Birds Brit. Mus., xix., p. 236 (1891).

Hierococcyx nasicolor (Hodgs.); Robinson and Kloss, tom. cit., p. 40.

An adult of undetermined sex from Ban Kok Klap.

"Iris hazel, feet and claws chrome, bill yellowish green at base, black at tip of lower mandible and on culmen, orbital skin rich lemon."

33. CHALCOCOCCYX ZANTHORHYNCHUS.

Chalcococcyx zanthorhynchus (Horsf.); Shelley, tom. cit., p. 289; Robinson and Kloss, tom. cit., p. 41.

This beautiful little cuckoo was fairly common at Ban Kok Klap, where two adult males and an immature female, with the head almost uniform chestnut and with but little greenish gloss on the dark bars of the upper surface, were obtained.

Adult male "Iris red, orbital skin vermilion, bill orange, vermilion at base, feet greenish slate."

In the south of the Peninsula both this species and the emerald cuckoo, *Ch. maculatus* are rare and possibly only seasonal visitors, but in the northern districts both species are much commoner.

34. CENTROPUS SINENSIS INTERMEDIUS.

Centroccocyx intermedius (Hume); Stray Feath., i., p. 454 (1873).

Centropus sinensis (Steph.); Shelley, tom. cit., p. 343; Robinson and Kloss, tom. cit., p. 41.

Centropus sinensis intermedius, Stresemann, Nov. Zool. xx., p. 322 (1913).

A single female, wing 212 mm., from Ban Kok Klap.

"Iris carmine, bill and feet black."

As Stresemann (*loc. cit.*) states the forms of pheasant cuckoo inhabiting the northern and southern districts are quite distinguishable, the present race being considerably smaller, especially in the length of the tail; the interscapular region is also of a darker chestnut. The name applicable to the southern race is *Centropus sinensis bubutus*, Horsf. [*Trans. Linn. Soc.*, xiii., p. 180 (1822)].

35. UROCOCCYX ERYTHROGNATHUS.

Urococcyx erythrognaethus (Hartl.); Shelley, tom. cit., p. 398
Robinson and Kloss, tom. cit., p. 43.

Exceedingly common both in primary and secondary jungle.
"Male, iris pale blue, female, orange."

36. RHOPODYTES TRISTIS.

Rhopodytes tristis (Less.); Shelley, tom. cit., p. 386; Robinson and Kloss, tom. cit., p. 42.

A female was shot on the upper portion of Kao Nawng at about 3,000 feet. The species is extremely common throughout the country in the northern parts of the Peninsula, though in the south it is only found at elevations above 3,000 feet.

37. ZANCLOSTOMUS JAVANICUS.

Zanclostomus javanicus (Horsf.); Shelley, tom. cit., p. 370; Robinson and Kloss, tom. cit., p. 42.

Very common in jungle near Ban Kok Klap, though we did not trouble to collect many specimens.

CAPITONIDÆ.

38. CHOTORHEA CHRYSOPOGON.

Chotorhea chrysopogon (Temm.); Shelley, Cat. Birds Brit. Mus., xix., p. 57 (1891); Robinson and Kloss, tom. cit., p. 43.

Common in the jungle on Kao Nawng as elsewhere in the Peninsula.

"Iris hazel grey, bill black, whitish at base, feet greenish."

39. CHOTORHEA MYSTACOPHANES.

Cyanops mystacophanes (Temm.); Shelley, tom. cit., p. 72.

Chotorhea mystacophanes, Robinson and Kloss, tom. cit., p. 43.

Very common on Kao Nawng; rarer in the southern parts of the Peninsula.

"Iris hazel, bill black, feet greenish."

40. CYANOPS DAVISONI.

Cyanops davisoni (Hume); Shelley, tom. cit., p. 65, pl. IV, fig. 1.

Two specimens of this species were obtained by the Dyaks at the upper camp on Kao Nawng between three and four thousand feet. The locality is a considerable extension of range for the species which has not hitherto been known south of Central Tenasserim.

41. MESOBUCCO CYANOTIS.

Mesobucco cyanotis (Blyth); Shelley, tom. cit., p. 87; Robinson and Kloss, tom. cit., p. 43.

The adults are quite typical specimens of this race with blue ear coverts unmixed with black. The species is found both in jungle and in open country.

42. ZANTHOLÆMA HÆMATOCEPHALA.

Zantholæma hæmatocephala (Mull.); Shelley, tom. cit., p. 89; Robinson and Kloss, tom. cit., p. 44.

The Coppersmith was fairly common in the low country and its note was often heard, though only one specimen was actually obtained.

PICIDÆ.

43. GECINUS VIRIDANUS.

Gecinus viridanus (Blyth); Hargitt, Cat. Birds Brit. Mus., xviii., p. 47 (1890); Robinson and Kloss, tom. cit., p. 45.

Two males and a female from the open country round Ban Kok Klap.

44. CHRYSOPHLEGMA MALACCENSE.

Chrysophlegma malaccense (Lath.); Hargitt, tom. cit., p. 122; Robinson and Kloss, tom. cit., p. 46.

A single male from Ban Kok Klap.

45. CHRYSOPHLEGMA HUMII.

Chrysophlegma humii, Hargitt, tom. cit., p. 126; Robinson and Kloss, tom. cit., p. 46.

Two females from Kao Nawng.

"Iris hazel brown, upper mandible plumbeous green, lower greenish horn, feet greenish."

46. GECINULUS VIRIDIS.

Gecinulus viridis (Blyth); Hargitt, tom. cit., p. 136.

A single female from Ban Kok Klap, shot among bamboos.

47. MIGLYPTES GRAMMITHORAX.

Miglyptes grammithorax (Malh.); Hargitt, tom. cit., p. 385; Robinson and Kloss, tom. cit., p. 46.

Three females from Kao Nawng.

"Iris chestnut, feet plumbeous green bill lead colour."

48. MICROPTERNUS BRACHYURUS.

Micropternus brachyurus (Vieill.); Hargitt, tom. cit., p. 396.

A male from Ban Kok Klap.

49. TIGA JAVANENSIS.

Tiga javanensis (Ljung); Hargitt, tom. cit., p. 412; Robinson and Kloss, tom. cit., p. 47.

A single female from Ban Kok Klap.

50. ALOPHONERPES PULVERULENTUS.

Hemilophus pulverulentus (Temm.); Hargitt, tom. cit., p. 494.

Allophonerpes pulverulentus, Robinson and Kloss, tom. cit., p. 47.

A very young male was brought in by natives at Ban Kok Klap.

51. *SASIA ABNORMIS*.

Sasia abnormis (Temm.): Hargitt, tom. cit., p. 557; Robinson and Kloss, tom. cit., p. 48.

A female from Kao Nawng.

EURYLEMIDÆ.

52. *CALYPTOMENA VIRIDIS*.

Calyptomena viridis, Raffles; Selater, Cat. Birds Brit. Mus., xiv., p. 456 (1888); Robinson and Kloss, tom. cit., p. 48.

Common.

"Iris hazel, bill and feet yellowish green."

A nest was found on 25th June hanging from a bough over water. It resembles the nest of the Rouge-et-Noir Broadbill, *Cymbirhynchus macrorhynchus*, and is an elongated bag-shaped structure composed of dead leaves and interwoven fibre, with the entrance at the side near the top. It contained two eggs, which were hard set. They are light creamy yellow in colour, somewhat glossy and in shape are elongated ovals measuring, A. 21.7×31 , B. 21.2×31.5 mm., approximately, the eggs being very much broken.

53. *EURYLEMUS JAVANICUS*.

Eurylemus javanicus, Horsf.; Selater, tom. cit., p. 463.

A male, female, and an immature female are in the collection, from the lower slopes of Kao Nawng, where it is rather commoner than the preceding species.

"Iris blue, bill robins' egg blue, tip of upper mandible greenish, tomia of both mandibles black, feet dirty pink."

54. *EURYLEMUS OCHROMELAS*.

Eurylemus ochromelas, Raffles; Selater, tom. cit., p. 465; Robinson and Kloss, tom. cit., p. 50.

In deep jungle on Kao Nawng, at 1200-1500 feet; not particularly common.

"Iris lemon yellow, bill robins' egg blue, black on edges, greenish on upper mandible, feet dirty pinkish brown."

55. *CYMBIRHYNCHUS MALACCENSIS*.

Cymbirhynchus macrorhynchus (Gm.); Selater, tom. cit., p. 468 (partim).

Cymbirhynchus malaccensis, Salvad, Atti. R. Accad. Tor., ix, p. 425; Robinson and Kloss, tom. cit., p. 50.

Not found in very deep jungle on the slopes of the mountains but abundant along the courses of the larger rivers, the large untidy nests, resembling debris from floods hanging from pendant bamboos over the water.

56. SERILOPHUS ROTHSCILDI.

Serilophus rothschildi, Hartert and Butler, Bull. B.O.C., lix, p. 50 (1898); iid., Ibis, 1898, p. 434.

Five specimens were collected on Kao Nawng, adults and young.

"Male, iris hazel, bill pale blue, tomia white, base including nostrils orange, periocular space, wax-yellow, feet the same, tinged with greenish claws bluish."

Compared with specimens of the true *S. rothschildi* from the mountains of Perak and Selangor these specimens show a very decided approach to *S. lunatus*, Gould, which is found throughout the greater portion of Tenasserim. The head and ear-coverts are tinged with clay brown not almost pure gray as in *S. rothschildi*, and the chestnut of the secondaries and tertiaries is much paler. The two forms are evidently only subspecies and grade completely into one another.

PITTIDÆ.

57. PITTA CYANOPTERA.

Pitta cyanoptera (Temm.); Selater, tom. cit., p. 420; Robinson and Kloss, tom. cit., p. 48.

The commonest of the genus round Ban Kok Klap but not found in very deep jungle. Nestling birds and a clutch of five eggs were obtained, the male bird being shot off the nest, which was a globular mass of dead leaves and rubbish on the ground. The young birds are much duller above and have the scarlet of the abdomen and under tail coverts of the adult birds indicated by salmon pink. The base and tip of the bill are orange red. The eggs were hard set and are obtuse ovals, fairly glossy and yellowish white in colour. Thinly spotted, mainly towards the larger end with small rounded spots of purish brown. They measure, A. 26.1×20 ; B. 25.9×20.2 ; C. 25.8×20 mm.

58. PITTA CUCULLATA.

Pitta cucullata, Hartl.; Selater, tom. cit., p. 442; Robinson and Kloss, tom. cit., p. 49.

Two were obtained at Ban Kok Klap.

59. EUCICHLA GURNEYI.

Eucichla gurneyi, Hume; Selater, tom. cit., p. 448; Robinson and Kloss, tom. cit., p. 49.

Very common indeed in the neighbourhood of Ban Kok Klap but not extending far up the slopes of Kao Nawng as it was not met with at either of our camps on that mountain.

60. EUCICHLA BOSCHI.

Eucichla boschi, Müll. and Schleg.; Selater, tom. cit., p. 447; Robinson and Kloss, tom. cit., p. 49.

Even commoner than *Eu. gurneyi* and extending further up the hill being found at over 2,000 feet elevation.

"Male, iris hazel, bill black, feet lavender in front, pinkish behind."

A nest was found on our way up Kao Nawng at about 700 feet on 10th June, 1913. It was placed in a small sapling about six or seven feet above the ground and consisted of a globular mass of dead leaves and fibre about the size of a man's head. It contained three eggs. They are broad blunt ovals in shape, moderately glossy, white and thickly spotted especially towards the broader end with dark purplish brown spots and streaks, some of the markings being beneath the surface of the shell.

The measurements are : A. 24.2×20.7 , B. 25×21 , C. 25.2×21 mm.

HIRUNDINIDÆ.

61. HIRUNDO BADIA.

Hirundo badia, Cass.; Sharpe, Cat. Birds Brit. Mus., x., p. 166; Robinson and Kloss, tom. cit., p. 50.

Common round the limestone hills in the vicinity of Ban Kok Klap.

MUSCICAPIDÆ.

62. CYORNIS DIALILEMA.

Cyornis dialilema Salvad., Ann. Mus. Civ. Gen., xxvii., p. 387 (1889); Robinson and Kloss, tom. cit., p. 52.

A couple of males in rather shabby plumage appear to be conspecific with specimens from Trang which we have identified with this form which seems to range down the Peninsula as far south as Selangor, where however it is only met with at considerable elevations. I must confess that I am unable to separate with any confidence males of *C. tickelliae*, Blyth; *C. sumatrensis*, Sharpe; *C. dialilema*, Salvad.; *C. rubeculoides* (Vig.) and another from allied to *C. nigrigularis*, Everett; all of which occur in the Malay Peninsula, though the first two forms have both sexes closely resembling each other while in the last three the females have no tinge of blue on the plumage.

63. ERYTHROMYIAS MUELLERI.

Erythromyias muelleri (Blyth); Sharpe, tom. cit., p. 200, pl. iv, fig. 2; Robinson Journ. Fed. Malay States Mus., ii, p. 188 (1909).

An adult female and two very young birds were obtained between 12-1500 feet on Kao Nawng.

"Iris dark, bill black, feet pale flesh."

This is the most northerly recorded locality for the species, which is a purely Malayan form, fairly common throughout the Peninsula at medium elevations and also found in Sumatra and Borneo. The adult bird is perfectly typical.

64. ANTHIPES SUBMONILIGER.

Anthipes submoniliger (Hume) ; Stray. Feath., v, p. 105 (1877).

Digenea submoniliger, Sharpe, Cat. Birds Brit. Mus., iv, p. 461 (1879) ; id. P.Z.S. (1888), pp. 246, 7.

This species was common at the top of Kao Nawng at over 4,000 feet and also occurred, though less numerously, at our lower camp.

Comparison of the series obtained with a large number of specimens from the more southern parts of the Peninsula, representing *A. malayana*, Sharpe, enables us to state with certainty that they do not belong to this form but are to be referred to the Tenasserim race, described by Hume from Mt. Muleyit. We have however recently collected in West Sumatra specimens of *A. solitaria* described by Müller in 1835, and comparison of these with skins from the actual type locality of *A. malayana* shows that the two races are absolutely identical as was not unexpected. Sharpe's name for the Peninsular race must therefore be suppressed.

65. ANTHIPES OLIVACEA.

Cyornis olivacea, Hume ; Stray Feath., v, p. 338 (1877) ; id. vi, p. 229 (1878).

Siphia olivacea, Sharpe, Cat. Birds Brit. Mus., iv, p. 457 (1879).

Anthipes olivaceus, Oates, Faun. Brit. Ind. Birds., ii, p. 34 (1890).

Fairly common on the lower slopes of Kao Nawng, also obtained at Trang on the west side of the Peninsula in 1910.

" Iris hazel, bill black, feet pale purplish flesh.

The sexes are alike and the nestling bird has the ordinary mottled plumage characteristic of the flycatchers, the wing coverts broadly tipped with yellowish buff.

I am by no means sure that this species is rightly placed with *Anthipes* by Oates ; except for the comparative feebleness of the rictal bristles and the rather weaker bill it might well be regarded as a *Rhinomyias*, with which genus the type of plumage better accords.

66. HYPOTHYMIS AZUREA.

Hypothymis azurea (Bodd.) ; Sharpe, tom. cit., p. 274 ; Robinson and Kloss, tom. cit., p. 53.

Hypothymis azurea prophata, Oberholser, Proc. U.S. Nat. Mus., xxxix, p. 597 (1911).

We only got one specimen in Bandon and it was not common in Trang.

67. TERPSIPHONE AFFINIS.

Terpsiphone affinis, Blyth ; Sharpe, tom. cit., p. 349 ; Robinson and Kloss, tom. cit., p. 53.

Very common throughout the country.

68. PHILENTOMA VELATUM.

Philentoma velatum (Temm.); Sharpe, tom. cit., p. 365.

A pair from Kao Nawng.

"Male and female, iris crimson, bill and feet black."

69. PHILENTOMA PYRRHOPTERUM.

Philentoma pyrrhopterum (Temm.); Sharpe, tom. cit., p. 366;
Robinson and Kloss, tom. cit., p. 53.

More abundant than *Ph. velatum* though in most localities the contrary is the case.

"Male, iris carmine, bill black, feet livid lead grey."

70. CULICICAPA CEYLONENSIS.

Culicicapa ceylonensis (Swains.); Sharpe, tom. cit., p. 369.

Fairly common on Kao Nawng.

"Male, iris dark hazel, upper mandible brown, lower fleshy brown, gape yellow, feet yellowish brown, soles brighter yellow.

71. CRYPTOLOPHA YOUNGI, sp. nov.

The only specimen of this very distinct flycatcher was obtained by one of our Dyak collectors on Kao Nawng at about 3,500 feet.

It is unfortunately very badly shot and in moult but it is evident that it represents a perfectly good new species, allied to, but readily separable from, *C. castaneiceps* of the Himalayas and Northern Tenasserim and *C. butleri* of the mountains of the southern Malay Peninsula.

Differs from all other members of the group in having the under tail coverts greyish white and the rump clear grey, the bases of the feathers paler.

Adult male. Crown chestnut, bordered by black on each side, sides of the head and lores grey, upper surface dark grey, paler on the rump, the scapulars only tinged with green. Primaries and wing coverts blackish brown, edged with greenish and with two bright yellow bars on the external aspect of the wing formed by the tips of the lesser and greater wing coverts. Under wing coverts and lengthened axillaries bright yellow; whole under surface and under tail coverts pearly grey, whiter on the middle of the abdomen and the under tail coverts; thighs yellowish green. Tail feathers brownish black-edged with greenish. Total length about 3.25, wing 1.9, tail 1.70, tarsus 0.68 inches.

I have named this species after Arthur Young, K.C.M.G., Governor of the Straits Settlements and High Commissioner of the Malay States, to whom I am indebted for permission to collect in Lower Siam and for facilities obtained from the Siamese authorities.

Type and only specimen obtained. Adult male, Kao Nawng, 3,500 feet, Bandon, N.E. Malay Peninsula, 26th June, 1913.

72. ABRORNIS SCHWANERI.

Cryptolopha schwaneri (Blyth.) ; Sharpe, tom. cit., p. 403.

Abrornis schwaneri, Robinson, Journ. Fed. Malay States Mus., ii, p. 191 (1908).

Five specimens from Kao Nawng and Ban Kok Klap are undoubtedly this species, originally described from Borneo, and not the Himalayan *A. superciliaris*, Tickell from the Himalayas down to Tenasserim. Tickell's type, however, came from somewhere in Tenasserim and if as is quite possible his specimen proves to be conspecific with the Bornean bird, his name falls and the birds from Sikkim and the Himalayas will have to be known as *A. flaviventris*, Jerd.

Common throughout the Peninsula especially in bamboo jungle ; but not found at low elevations in the south.

" Iris dark brown, bill plumbeous horn, pinkish at tomtia and gape, feet brownish flesh.

CAMPOPHAGIDAE.

73. CAMPOPHAGA NEGLECTA.

Campophaga neglecta (Hume) ; Sharpe, Cat. Birds Brit. Mus., iv, p. 68 (1879) ; Robinson and Kloss, tom. cit., p. 54.

Not common.

74. PERICROCOTUS FLAMMIFER.

Pericrocotus flammifer, Hume ; Sharpe, tom. cit., p. 74 ; Robinson and Kloss, tom. cit., p. 54.

Very common on Kao Nawng but very wild and hard to obtain

75. PERICROCOTUS IGNEUS.

Pericrocotus igneus (Blyth) ; Sharpe, tom. cit., p. 78.

A pair from Ban Kok Klap.

PYCNONOTIDÆ.

76. ÆGITHINA TIPHIA.

Aegithina tiphia (Linn.) ; Sharpe, Cat. Birds Brit. Mus., vi, p. 7 (1881) ; Robinson and Kloss, tom. cit., p. 55.

A single female.

77. ÆTHORHYNCHUS LAFRESNAYEI.

Aethorhynchus lafresnayei (Hartl.) ; Sharpe, tom. cit., p. 14 ; Robinson and Kloss, tom. cit., p. 55.

Quite common.

78. CHLOROPSIS CHLOROCEPHALA.

Chloropsis chlorocephala (Wald.) ; Sharpe, tom. cit., p. 28 ; Robinson and Kloss, tom. cit., p. 55.

Common ; the only green bulbul met with in Bandon.

79. IRENA PUÉLLA.

Irena puella (Lath.): Sharpe, tom. cit., p. 177; Robinson and Kloss, tom. cit., p. 56.

Common on Kao Nawng.

80. HEMIUS MALACCENSIS.

Hemius malaccensis (Blyth): Sharpe, tom. cit., p. 52; Robinson and Kloss, tom. cit., p. 56.

A single male from Kao Nawng.

81. IOLE PERACENSIS.

Iole tickelli peracensis, Hartert and Butler, Nov. Zool., v. p. 509 (1898).

A single male, shot on Kao Nawng at about 3,000 feet, is precisely identical with specimens from the typical locality, Gunong Ijau, Larut hills, Perak.

82. CRINIGER SORDIDUS.

Criniger sordidus, Richmond, Proc. U.S. Nat. Mus., xxii, p. 320 (1900); Robinson and Kloss, tom. cit., p. 57.

Two specimens from Kao Nawng, one from over 3,000 feet and another from about 1,200 feet, agree with authentic specimens of this race from Trang, but as we have noticed elsewhere the differences from *C. ochraceus*, Moore, are extremely indefinite. Specimens from Perlis are quite intermediate.

"Iris brownish red, bill plumbeous, paler below, feet plumbeous with pink soles."

83. PYCNONOTUS ROBINSONI.

Pycnonotus robinsoni, Ogilvie Grant, Fascic. Malay. Zool., iii, p. 85 (1905). Kloss, Journ. Fed. Malay States Mus., iv, p. 231 (1911).

Pycnonotus blanfordi, Bonhote (nec Jerd.), P.Z.S. 1901 (i), p. 57.

The species also occurs in Trang but was overlooked in the account of the collection from that province; it has also been obtained in the State of Perlis while the Biserat specimen identified by Bonhote as *P. blanfordi* (loc. cit. supra) is almost certainly identical. The species was common in the low country in Bandon province and a pair were obtained at Ban Kok Klap.

84. OTOCOMPSA EMERIA.

Otocompsa jocosa (Linn.); Sharpe, tom. cit., p. 157.

Otocompsa emeria, Robinson and Kloss, tom. cit., p. 58.

Very much rarer in Bandon than in Trang. A single male only was obtained at Ban Kok Klap.

TIMELIIDÆ.

85. EUPETES MACROCERCUS.

Eupetes macrocerus, Temm.: Sharpe, Cat. Birds Brit. Mus., vii, p. 338 (1883).

Fairly common on Kao Nawng, this being the most northerly locality recorded for the species. A ground bird having very much the habits of a Pitta. An adult female and three very young birds were procured. Very young birds are uniform sooty black beneath, except the throat which is white, but the chestnut rufous of the adult soon begins to make its appearance.

"Adult, iris hazel, bill black, feet slate, skin on sides of neck, purplish violet, shading into livid white. Immature, iris hazel, bill black, yellow at gape, feet slate, naked skin at sides of neck, pinkish."

86. TROCHALOPTERUM PENINSULÆ.

Trochalopecterum peninsulæ, Sharpe, P.Z.S. 1887, p. 436, pl., xxxvii.

A pair from 3,500 feet on Kao Nawng, agree very closely with specimens from the typical locality except that the crown is very slightly paler, therein showing an approach to *T. melanostigma* which ranges south to Muleyit Mt. and the Salwin river.

87. POMATORHINUS OLIVACEUS.

Pomatorhinus olivaceus, Blyth; Sharpe, Cat. Birds Brit. Mus., vii, p. 414 (1883); Robinson and Kloss, tom. cit., p. 59.

Fairly common on Kao Nawng from about 1,200 feet to the summit of the mountain.

"Iris orange, bill chrome yellow, feet pale grey, soles greenish yellow, claws horn."

88. PELLORNEUM SUBOCHRACEUM.

Pellorneum subochraceum, Swinh.: Sharpe, tom. cit., p. 521; Robinson and Kloss, tom. cit., p. 59.

Fairly common in Bandon, generally in secondary jungle and in patches of scrub at the edge of rice fields.

89. TURDINUS OLIVACEUS.

Malacopteron olivaceum, Strickland, Ann. and Mag. Nat. Hist., xix, p. 132 (1847).

Turdinus abbotti (Blyth); Sharpe, tom. cit., p. 541; Robinson and Kloss, tom. cit., p. 59.

Fairly common. The five specimens before me from Kao Nawng are somewhat brightly coloured beneath, therein approaching the northern race *T. abbotti*, of which this form is only a subspecies.

90. TURDINUS MAGNIROSTRIS.

Turdinus magnirostris (Moore); Sharpe, tom. cit., p. 547.

Common on Kao Nawng.

"Adult, iris red, bill plumbeous grey, slightly yellow on tomia and at gape, feet pale grey, yellowish on toes. Immature, iris hazel grey, feet pale flesh, bill, upper mandible greenish horn, lower waxy yellow, gape bright yellow, orbital skin greenish yellow."

91. DRYMOCATAPHUS NIGRICAPITATUS.

Drymocataphus nigricapitatus (Eyton); Sharpe, tom. cit., p. 554; Robinson and Kloss, tom. cit., p. 60.

Rare; only one specimen was obtained in jungle near Ban Kok Klap.

92. DRYMOCATAPHUS TICKELLI.

Drymocataphus tickelli (Blyth); Sharpe, tom. cit., p. 557; Robinson and Kloss, tom. cit., p. 60.

As elsewhere in the Peninsula very common on Kao Nawng among bamboos.

"Iris chestnut red, feet pinkish flesh, bill plumbeous, darker on upper mandible."

93. CORYTHOCICHLA LEUCOSTICTA.

Corythocichla leucosticta, Sharpe, P. Z. S. 1887, p. 438; Robinson and Kloss, tom. cit., p. 61.

This babbler was very common on Kao Nawng, ranging from the foot of the mountain to the summit and also occurred nearly at sea-level at Ban Kok Klap, though in the Federated Malay States it is not found below 2,500 feet.

A series of ten specimens compared with large numbers from more southern localities including the actual type locality of the species show very intangible differences though the ground colour of the upper surface is perhaps rather lighter in the Bandon birds.

Three forms of the genus,* the present one, *C. striata* from Assam and Manipur, and *C. brevicaudata* from Muleyit in Tenasserim are extremely closely related and as might be expected the Malayan race is more closely connected with the Muleyit one with which it agrees in having the tips of the wing coverts white, not fulvous, and the sides of the head ashy not brown. Indeed they are quite possibly identical.

"Iris carmine, tarsi brownish, bill plumbeous horn, darker on culmen."

94. ALCIPPE PHAYRII.

Alcippe phayrii, Blyth; Sharpe, tom. cit., p. 623; Robinson and Kloss, tom. cit., p. 61.

* *C. crassa*, Sharpe, from the mountains of N. Borneo seems rather more distinct.

Almost the commonest bird in the jungle on Kao Nawng, keeping generally to the bushes and smaller trees. We did not obtain it near Ban Kok Klap so that it is evidently a submontane species, replaced in the south of the Peninsula by *A. peracensis*, Sharpe.

"Iris hazel-grey feet dark fleshy brown, bill, upper mandible corneous tip and edges dull yellow, lower mandible more broadly yellow, gape bright yellow, orbital ring greenish waxy yellow.

95. ALCIPE CINEREA.

Alcippe cinerea, Blyth; Sharpe, tom. cit., p. 622; Robinson and Kloss, tom. cit., p. 61.

A pair only from Kao Nawng, where it was rare. The species does not extend into Tenasserim and these specimens are the most northerly recorded.

96. STACHYRIS DAVISONI.

Stachyris davisoni, Sharpe; Bull. B.O.C., i, p. vii, (1892); Robinson and Kloss, tom. cit., p. 61.

A large series from Kao Nawng where it ranges up to about 2,000 feet. Comparison of these birds with numerous specimens from the typical locality (Tahan river, Pabang) show that they are identical. *St. nigriceps* (Hodgs), which I had included in the local list on the strength of birds from Trang identified as such Mr. Richmond must therefore be deleted from the Malayan Fauna.

"Iris chestnut hazel, bill plumbeous, darker on culmen, feet greenish lead."

97. STACHYRIDOPSIS CHRYSOPS.

Stachyris chrysea bocagii, Salvad; Robinson Journ. Fed. Malay States Mus., ii, p. 202.

Stachyris chrysops, Richmond, Proc. Biol. Soc., Washington, xv, p. 157 (1902).

Four specimens of this golden babbler were obtained near the summit of Kao Nawng and must certainly be conspecific with *St. chrysops* obtained in the mountains of Trang, about 80 miles to the south.

At one time I thought that the Malayan form might be identical with the Sumatran race but examination of a series collected on the hills of that island shows that the insular form is a darker and duller form, even darker than *St. assimilis* (Walden) from Assam and Central Tenasserim, especially on the flanks.

Pending direct comparison of series of fresh specimens from the Himalayas, Assam, Tenasserim, Sumatra and the Malay Peninsula, I have thought it best to let the Malayan specimens stand under Richmond's name though it is evident that *St. chrysea* (Hodgs); *St. assimilis* (Walden); *St. bocagii*, Salvad and *St. chrysops*, Richm are all but slightly differentiated subspecies.

98. THRINGORHINA GUTTATA.

Stachyris guttata (Tick.) : Sharpe, tom. cit., p. 535.

Thringorhina guttata. Oates, Faun. Brit. Ind. Birds, i, p. 155 (1889).

Tickell's spotted babbler was very common on Kao Nawng keeping to bushes and low trees in parties of two or three. It has also been obtained in the West Coast State of Trang by Dr. W. L. Abbott but has not yet been met with further south in the Peninsula.

"Iris chestnut, bill slate, darker on culmen, feet greenish.

99. CYANODERMA ERYTHROPTERUM.

Mixornis erythroptera (Blyth) ; Sharpe, tom. cit., p. 580.

Cyanoderma erythroptera, Robinson and Kloss, tom. cit., p. 62.

A single male from Ban K k Klap.

100. CHALCOPARIA PHENICOTIS.

Anthothreptes phœnicotis (Temm.) ; Gadow, Cat. Birds Brit. Mus., ix, p. 121 (1881).

Chalcoparia phœnicotis (Temm.) ; Oates, Faun. Brit. Ind. Birds, ii, p. 373 (1890).

A single female from Ban Kok Klap.

It is, I think, obvious as Oates (*loc. cit.*) has pointed out that this bird is misplaced among the *Nectariniidæ* and that its proper position is somewhere among the *Timeliidæ*.

101. MIXORNIS GULARIS.

Mixornis gularis (Raffles) ; Sharpe, tom. cit., p. 576 ; Robinson and Kloss, tom. cit., p. 62.

Four specimens from Kao Nawng and others from Trang, Terutau and Perlis are not typical *M. gularis* but are intermediate between that species and *M. rubricapilla*. They resemble the latter in having the mantle and external aspect of the primaries more olive and less chestnut and the former in the broadness of the black streaks on the throat and upper breast.

102. BRACHYPTERYX WRAYI.

Brachypteryx wrayi, Ogilvie Grant, Bull. B.O.C., xix, p. 10 (1906) ; id. Journ. Fed. Malay States Mus., iii, p. 26 (1908).

A male and a female from 4,000 feet, Kao Nawng, both of which are in the brown plumage agree precisely with others from Gunong Tahan and from the main peninsular range in Perak and Selangor.

103. SIVA SORDIDIOR.

Siva sordidior, Sharpe, P.Z.S. 1888, p. 276.

Five specimens from about 3,000 feet on Kao Nawng are in such faded and abraded plumage that their identification is a matter of some

uncertainty. They appear, however, to belong to this form and not to the more northern *S. sordida*. Hume, which is found on Mt. Muleyit in Central Tenasserim.

101. *HERPORNIS ZANTHOLEUCA*.

Herpornis zantholeuca (Hodgs.); Sharpe, tom. cit., p. 636; Robinson and Kloss, tom. cit., p. 63.

Eleven skins from the lower slopes of Kao Nawng, where it was one of the commonest birds.

105. *PTERYTHIUS ÆRALATUS*.

Pterythius æralatus (Tick.); Gadow, Cat. Birds Brit. Mus., viii, p. 114 (1883); Oates Faun. Brit. Ind. Birds, i, p. 225 (1889).

A very common species above 2,000 feet on Kao Nawng.

"Iris chestnut, bill black on culmen, remainder plumbeous, feet pale flesh, claws dark."

106. *MESIA ARGENTAUROS*.

Mesia argentauris (Hodgs.); Sharpe, tom. cit., p. 642.

Apparently quite common above 3,000 feet; five specimens were obtained by the Dyaks in the vicinity of the upper camp on Kao Nawng.

TROGLODYTIDÆ.

107. *PNŒPYGA PUSILLA*.

PNœpyga pusilla, Hodgs.; Sharpe, Cat. Birds Brit. Mus., vi, p. 304 (1881).

A pair of hill-wrens from near the summit of Kao Nawng at about 4,000 feet differ from others from the southern parts of the Peninsula, of which the Museum possesses a large series in being rather duller above and in having the lower surface much less strongly squamate. They are probably referable to the above-named species, which has been found as far south as Muleyit Mountain in Central Tenasserim, while the southern Malayan specimens have been identified with *Pn. lepida*, Salvad. from the mountains of Sumatra.

TURDIDÆ.

108. *HYDROCICHLA RUFICAPILLA*.

Hydrocichla ruficapilla (Temm.); Sharpe, Cat. Birds Brit. Mus., vii, p. 319 (1885).

Very common along the rocky streams on Kao Nawng.

"Iris chestnut, bill black, feet pale lilac flesh."

109. *HYDROCICHLA FRONTALIS*.

Hydrocichla frontalis (Blyth); Sharpe, Cat. Birds Brit. Mus., vii, p. 321 (1885); Robinson and Kloss, tom. cit., p. 64.

On Kao Nawng, but much rarer than the preceding.

110. CITTOCINCLA MACRURA.

Cittocinclla tricolor (Vieill.) ; Sharpe, tom. cit., p. 85.

Cittocinclla macrura (Gm.) ; Robinson and Kloss, tom. cit., p. 65.

Very common.

SYLVIIDÆ.

111. ORTHOTOMUS RUFICEPS.

Orthotomus ruficeps (Less.) ; Sharpe, Cat. Birds Brit. Mus., vii, p. 224 (1883) ; Robinson and Kloss, tom. cit., p. 66.

We obtained five specimens of this tailor-bird near Ban Kok Klap, this being the only place in the Peninsula, where we have found it at all abundant.

112. ORTHOTOMUS ATRIGULARIS.

Orthotomus atrigularis, Temm. ; Sharpe, tom. cit., p. 229 ; Robinson and Kloss, tom. cit., p. 66.

An immature male from Kao Nawng.

LANIIDÆ.

113. HEMIPUS PICATUS.

Hemipus picatus (Sykes) ; Sharpe, Cat. Birds Brit. Mus., iii, p. 367 (1877) ; Robinson and Kloss, tom. cit., p. 69.

Four specimens from Kao Nawng and Ban Kok Klap.

114. TEPHRODORNIS GULARIS.

Tephrodornis gularis (Raffles) ; Sharpe, tom. cit., p. 278 ; Robinson and Kloss, tom. cit., p. 69.

A male from Kao Nawng and a female from Ban Kok Klap.

These specimens are typical *T. gularis* and Oates statement that the allied *T. pelvius* extends southwards down the Malay Peninsula (Faun. Brit. Ind. Birds., i, p. 474) appears to have no foundation in fact.

115. PLATYSMURUS LEUCOPTERUS.

Platysmurus leucopterus (Temm.) ; Sharpe, tom. cit., p. 90 ; Robinson and Kloss, tom. cit., p. 71.

This noisy bird was very numerous in secondary jungle at Ban Kok Klap.

PARIDÆ.

116. MELANOCHLORA FLAVOCRISTATA.

Melanochlora flavocristata (Lafr.) ; Hellmayr, Tierreich, Paridæ, p. 31 (1903) ; Robinson and Kloss, tom. cit., p. 70.

Melanochlora sultanea (part.) ; Gadow, Cat. Birds Brit. Mus., viii, p. 6 (1883).

Fairly common on Kao Nawng and on the foot hills at the base of the mountain.

Four males were obtained.

" Iris hazel, bill black, feet bluish with a greenish cast."

SITTIDÆ.

117. DENDROPHILA SATURATOR.

Sitta frontalis saturator, Hartert, Nov. Zool., ix, p. 573 (1902).

Dendrophila saturator, Robinson and Kloss, tom. cit., p. 70.

A single male, rather pale beneath, like others from Trang but probably referable to this form and not to *D. frontalis*.

118. PLATYLOPHUS ARDESIACUS.

Platylophus ardesiacus (Cab.); Sharpe, tom. cit., p. 278; Robinson and Kloss, p. 69.

Kao Nawng and Ban Kok Klap.

"Male, iris chestnut red, bill and feet black."

DICRURIDÆ.

119. DISSEMURUS PARADISEUS.

Dissemurus paradiseus (Linn.); Sharpe, tom. cit., p. 225; Robinson and Kloss, tom. cit., p. 71.

Common everywhere; the only drongo seen.

NECTARINIIDÆ.

120. ÆTHOPYGA SANGUINIPECTUS.

Æthopyga sanguinipectus, Wald., Gadow, Cat. Birds Brit. Mus., ix, p. 27 (1884).

Between the upper camp on Kao Nawng (3,050 feet) and the summit of the mountain (4,200 feet) our Dyak collectors obtained six males and a female of this very beautiful sunbird. The present locality is a very considerable extension of range for the species, which has not hitherto been obtained south of Muleyit mountain in Central Tenasserim. No other sunbirds of this genus were obtained though one species, *Æthopyga anomala*, allied to *Æ. saturata* of the eastern Himalayas and *Æ. wrayi* of the mountains of the southern Malay Peninsula has been described from the collections made by Dr. Abbott in the mountains of Trang but a little to the south of the present locality.

121. ARACHNOTHERA LONGIROSTRIS.

Arachnothera longirostris (Lath.); Gadow, tom. cit., p. 103; Robinson and Kloss, tom. cit., p. 77.

One female from Ban Kok Klap.

122. ARACHNOTHERA MODESTA.

Arachnothera modesta (Eyton); Gadow, tom. cit., p. 107; Robinson and Kloss, tom. cit., p. 77.

One female from 3,500 feet on Kao Nawng.

123. ARACHNOTHERA CHRYSOGENYS.

Arachnothera chrysogenys (Temm.): Gadow, tom. cit., p. 108; Robinson and Kloss, tom. cit., p. 77.

A male from the lower camp on Kao Nawng, about 1,200 feet. Nowhere common.

124. ANTHOTHREPES HYPOGRAMMICA.

Anthothrepes hypogrammica (S. Müll.); Gadow, tom. cit., p. 112; Robinson and Kloss, tom. cit., p. 76.

A single much damaged specimen from Kao Nawng, where it was rare.

DICEIDÆ.

125. DICEUM TRIGONOSTIGMA.

Dicæum trigonostigma (Scop.); Sharpe, Cat. Birds Brit. Mus., x, p. 38; Robinson and Kloss, p. 78.

Common nearly everywhere.

126. PRIONOCHILUS MACULATUS.

Prionochilus maculatus (Temm.); Sharpe, tom. cit., p. 69; Robinson and Kloss, tom. cit., p. 32.

Two males from Kao Nawng.

"Iris dark, bill plumbeous, feet pale plumbeous.

ZOSTEROPIDÆ.

127. ZOSTEROPS TAHANENSIS.

Zosterops tahanensis, Ogilvie Grant; Bull. B.O.C., xix, p. 10 (1906); Robinson and Kloss, tom. cit., p. 79.

Three males from near the summit of Kao Nawng, agreeing well with other specimens from Trang and the mountains of Selangor.

ON A COLLECTION OF MAMMALS FROM THE SIAMESE
PROVINCE OF BANDON, N.E. MALAY PENINSULA.

BY H. C. ROBINSON, C.M.Z.S., M.B.O.U. AND C. B. KLOSS, F.Z.S.

THE collection of mammals obtained in Bandon is fairly representative of the fauna of the district and contains a considerable number of specimens that throw light on the local distribution of Malayan mammals.

A preliminary account of the forms considered new to science has already appeared in the "Annals and Magazine of Natural History, ser. (8) xiii, pp. 223 et seqq. (1914) but in addition to these another race, *Sciurus tenuis gunong*, has been described in the present paper, while two other species, the bat, *Eptesicus pachyotis*, and the ground squirrel, *Menetes berdmorei*, have not hitherto been recorded from Peninsular limits.

As regards the general facies of the collection it may be stated that the evidence shows that the district lies on the extreme limit of the true Malayan fauna, certain forms such as *Sciurus vittatus miniatus*, *Sciurus hippurus* and *Rhinosciurus tupaoides* here exhibiting their furthest northern extension while other species such as *Sciurus erythraeus rubeculus*, and *Epimys orbus* indicate an admixture of Burmese races.

A general account of the collecting stations has already been given in the account of the Birds (*antea*, pp. 83-5) to which it is unnecessary to refer further.

1. HYLOBATES LAR (LINN.).

1 ♂. Kao Nawng, Bandon, N.E. Malay Peninsula, 1,400 feet.

An example from mountain jungle on Kao Nawng is in light pelage, the hands and feet only slightly contrasting with the colour of the limbs. Dark coloured specimens seem very rare in the northern parts of the Peninsula, though they are in the great majority in the central and southern parts.

Not at all common over the greater part of Bandon, but fairly numerous on a small hill a few miles from the town. The flesh is in great demand as a remedy for a variety of complaints as is that of *Presbytis robinsoni* and *P. neglecta keatii*, though curiously enough that of *P. obscura* is of no value for this purpose.

(For measurements see p. 113.)

2. PRESBYTIS NEGLECTA KEATH. ROB. & KLOSS.

Presbytis neglecta keatii, *Robinson and Kloss, Journ. Fed. Malay States*, iv, p. 174 (1911).

1 ♂, 1 ♀. Kao Nawng, Bandon, N.E. Malay Peninsula, 1,400 feet.

Agree with topotypes from Trang except that the white area appear to be somewhat reduced, that on the inner side of the thigh not extending as far as the heel.

Very common in parties of five or six in primary and secondary jungle round Kao Nawng, but not coming into villages or cultivated land.

In a recent paper (*Smithsonian Misc. Coll.*, vol. 61, No. 21, p. 28, 1913), G. S. Miller has restricted the name *P. femoralis*, at one time applied to monkeys of this type, ranging from Tenasserim, through the Malay Peninsula to Sumatra and Borneo, to the form inhabiting Singapore Island, though some ambiguity attaches to the real origin of Martin's type.

In view of this we have preferred to use the name *Presbytis neglecta* (Schlegel) (*Mus. Pays. Bas.*, vii, p. 47, 1876) for the animal from Singapore and to regard this as the primary name available for the Peninsular animals.

In the same paper Miller has also given a diagnosis of a new race from Johore, stating that it is similar to that from Singapore Island but is larger than that form, having the greatest length of skull, about 95 mm. His description is founded on five specimens, four from Johore and one from Southern Pahang. A male specimen from Singapore in the Federated Malay States Museum has the greatest skull length 89.3 mm., two specimens in the British Museum from Pulau, South Johore measure 89.9 and 86.3 respectively, and a male and a female from Segamat, North Johore, are 88.5 and 86.5 respectively, while the length given by Miller for his specimen from Singapore is 88.3.

Of the northern race *P. n. keatii*, five males range from 92 to 96.7 and four females from 92.4 to 97.0 mm. It is evident therefore that the series in our possession does not confirm Miller's conclusions as to the separability of animals from Johore and Singapore, though there is no doubt that the northern race is distinct from these both in size and colour.

(For measurements see p. 113.)

3. *PRESBYTIS ROBINSONI*. THOMAS.

Presbytis robinsoni, *Thos., Abstract, P.Z.S.* 1910, p. 25; *id. P.Z.S.* 1910, p. 635.

♂. Kao Nawng, Bandon, N.E. Malay Peninsula, 1,400 feet.

The adult agrees closely with the type from Trang.

This white lotong is common on Kao Nawng where it is almost always found associating with small parties of the preceding form, of which it is very probably an aberration. It may be remarked that all three specimens known to date present abnormalities in the structure and character of the hair, the patches of pigment being irregularly distributed through them, while the unpigmented

portions are narrowed in diameter. The skull presents no differences whatever from those of *P. n. keatii*, with which we have compared it.

(For measurements *see* below.)

4. PRESBYTIS OBSCURA, SUBSP. (N.).

♂ imm. Ban Kok Klap, Bandon, N.E. Malay Peninsula. 2nd July, 1913.

An immature male (greatest cranial length 83.6 mm.) differs from normal adults in being of a pale café-au-lait colour; the occiput, nape, median dorsal line and middle areas of the limbs being creamy to light buff with the forehead sides of the face and neck, chest, shoulders, sides of body, hands and feet, pale snuff brown. At a casual glance this specimen might be referred to the preceding race, from which however it can at once be distinguished by the arrangement of the hair on the forehead.

A form of *Pr. obscura* was common in the district, though we did not collect other specimens.

Measurements of monkeys from Bandon Province, N.E. Malay Peninsula:

Species.	Locality.	S.M. No.	Sex.	Head and body.	Tail.	Hind foot.	Ear.	Greatest length of skull.	Basal length.	Zygomatic breadth.	Maxillary tooth-row.
<i>Hylobates lar</i> ...	Kao										
	Nawng	550 13	Male	453	...	152	31	191.2	74	69.5	32.3
<i>Presbytis neglecta</i>											
keatii ...	"	547 13	"	482	699	164	35	93	61	70	30
" ...	"	546 13	Fem.	473	677	162	32	92.7	62	71.5	30
<i>Presbytis robinsoni</i> ...	"	549 13	Male	455	752	171	32	97.5	64.5	70	30.7

5. PAGUMA LEUCOMYSTAX ROBUSTUS (MILLER).

Paradoxurus robustus, Miller, *Proc. Biol. Soc. Washington*, xix, p. 26 (1906).

♂ imm. Ban Kok Klap, Bandon, N.E. Malay Peninsula. 30th June, 1913.

A young specimen with the milk dentition partly in place.

6. TUPAIA GLIS WILKINSONI. ROB. & KLOSS.

Tupaia ferruginea subsp. wilkinsoni, Robinson and Kloss, *Journ. Fed. Malay States Mus.*, iv, p. 173 (1911).

Tupaia lacernata subsp. wilkinsoni, Lyon, *Proc. U.S. Nat. Mus.*, 45, p. 52 (1913).

1 ♂ ad, 1 ♀ ad, 1 ♂ imm, 1 ♀ imm. Kao Nawng, Bandon, N.E. Malay Peninsula, 3,500 feet. June. 1913.

2 ♂ ad, 2 ♀ ad. Kao Nawng, Bandon, N.E. Malay Peninsula, 1,400 feet. June, 1913.

3 ♂ ad, 4 ♀ ad. Ban Kok Klap, Bandon, N.E. Malay Peninsula. June, July, 1913.

These specimens are not altogether typical *T. g. wilkinsoni*, a number of the series having shoulders almost approximating in ferruginous tint to many animals of the *ferruginea* race from the

Federated Malay States. It is possible that the latter form is slower to change on the east side of the Peninsula than on the west.

Several of the specimens from the lower altitudes have the long black piles on the rump very abundant forming a conspicuous shining patch but this occurs also, though more rarely in other races.

(For measurements *see* below.)

Measurements of *Tupaia* from Bandon Province, N.E. Malay Peninsula:

Species.	Locality.	S.M. No.	Sex.	Head and body.	Tail.	Hind foot.	Ear.	Greatest length of skull.	Greatest cranial breadth.	Tip of premaxillaries to lacrymal notch.
<i>Tupaia glis wilkinsoni</i>	Kao Nawng	271/13	Fem.	188	162	43.5	16	52.8	26.0	23.0
"	Ban Kok Klap	273/13	Male	178	157	42.5	17	51.7	26.0	22.5
"	"	274/13	Fem.	172	154	43.5	16	51.2	25.0	22.4
"	"	275/13	"	178	154	40	18	50.0	24.8	21.5
"	"	276/13	"	177	158	41	14	50.7	24.3	22.4
"	"	277/13	"	184	162	43	17.5	51.0	24.4	22.1
"	Kao Nawng	278/13	Male	165	165	40	21	49.3	25.8	21.1
"	"	279/13	Fem.	175	165	45	15	50.4	25.5	21.7
"	Ban Kok Klap	388/13	Male	179	158	41	15	51.0	25.1	22.4
"	Kao Nawng	392/13	"	174	156	42.7	17	"	"	21.8
"	"	442/13	"	154	148	42.5	16.5	51.1	25.8	21.9
"	Ban Kok Klap	443/13	Fem.	180	160	43.5	16	49.0	25.2	20.8

7. GALEOPTERUS TEMMINCKI PENINSULÆ THOS.

Galeopterus peninsulæ, *Thos*, *Ann. and Mag. Nat. Hist.* (8) ii, p. 303 (1908).

♀. Ban Kok Klap, Bandon, N.E. Malay Peninsula. 1st July, 1913.

A female in grey pelage agreeing with others of the sex from the south of the Malay Peninsula.

Head and body, 399; tail, 277; hind foot, 71; ear, 23.

Skull.—Condylar-basal length, 73; greatest breadth, 48.3; interorbital breadth, 20; palatal length, 34.3; maxillary tooth-row 37.4; three molars, 10.9.

8. CYNOPTERUS BRACHYOTIS ANGULATUS MILLER.

Cynopterus angulatus, *Miller*, *Proc. Acad. Nat. Sci., Philadelphia*, p. 316 (1898).

Cynopterus brachyotis angulatus, *Andersen*, *Cat. Chir. Brit. Mus.*, (2nd ed.), p. 611 (1912).

1 ♂ 3 ad. Ban Kok Klap, Bandon, N.E. Malay Peninsula, 30th June, 1913.

It is stated by Andersen (*loc. cit.*, p. 609) that the relatively smaller ears (13-18 mm.) are the only characters by which the races of *C. brachyotis* can be distinguished from those of *C. sphinx* (18-20 mm.). The above four specimens have the ear averaging 19.6 measured in the flesh and 17 mm. when dry. From the balance of other measurements it must however be considered that these examples are still within the dimensions which indicate inclusion in *C. b. angulatus*, but at the same time they appear to be of greater size than more southern specimens and point to the conclusion that in the locality of Bandon *C. brachyotis* is commencing to intergrade with *C. sphinx*. It would perhaps be more logical to regard *C. angulatus* as a sub-species of the latter rather than the former species.

Measurements of *Cynopterus brachyotis angulatus* from Bandon Province, N. E. Malay Peninsula:

S. M. No.	...	...	...	...	363/13	364/13	365/13	366/13
Sex	...	...	...	...	Female	Female	Male	Female
Head and body	...	...	...	...	92	91	93	97
Tail	...	...	...	...	11	11	12	12
Hind foot	...	...	...	...	13.5	13	14	13.5
Ear	...	...	...	...	20.5	19.5	19.5	19
Fore-arm	...	...	...	...	67	63	65	70.5
3rd Metacarpal	...	...	...	...	44.5	42.5	43	44
III'	...	...	...	...	28.5	26.2	26.2	29
Tibia	...	...	...	...	26	24.2	25.2	26
Greatest length of skull	...	...	...	...	31.4	30.7	31.5	31.0
Condylar-basal length	...	...	...	...	29.8	29.1	29.6	29.0
Zygomatic breadth	...	...	...	...	21.0	20.5	20.5	21.6
Rostrum	...	...	...	...	8.3	8.0	8.0	—
Mandible	...	...	...	...	24.6	23.2	24.7	24.6
C-m. 'crowns	...	...	...	...	10.3	10.5	10.6	10.5

9. EMBALLONURA PENINSULARIS. MILLER.

4 ♂, 2 ♀. Kao Nawng, Bandon, N. E. Malay Peninsula, 1,400 feet. June, 1913.

(For measurements see below.)

Measurements of *Emballonura peninsularis* from Bandon Province, N. E. Malay Peninsula.

S. M. No.	...	...	...	523/13	524/13	525/13	526/13	528/13	562/13	563/13
Sex	...	...	...	♂	♂	♀	♂	♀	♂	♂
Head and body	...	...	...	42	44	41	43	42	41	44
Tail	...	...	...	13	11	13.3	15	15	14	13.7
Tibia	...	...	...	17.5	18.4	17	17.2	18	17	16.1
Hind foot	...	...	...	6.6	7.5	6.8	6.6	6.0	7.0	7.0
Fore-arm	...	...	...	45	45	44	45	44.5	45.5	44
3rd Metacarpal	...	...	...	38.3	40.8	40.2	41	41	40	—
Greatest length of skull	...	...	...	14.9	14.5	14.6	14.6	14.3	14.4	—
Greatest ante-orbital breadth	...	...	...	—	5.5	5.6	5.8	5.6	5.4	—
Least inter-orbital breadth	...	...	...	2.8	2.8	2.8	3.0	2.9	3.0	3.0
Zygomatic breadth	...	...	...	8.5	—	8.6	8.7	8.9	8.7	8.7
Cranial breadth	...	...	...	7.0	7.2	7.0	7.0	7.2	7.0	7.1
Mastoid breadth	...	...	...	7.7	7.8	7.7	7.7	7.9	7.7	—

10. MYOTIS MURICOLA (TEMN.).

1 ♂. Kao Nawng, Bandon, N.E. Malay Peninsula, 1,400 feet. June, 1913.

Head and body, 44; tail, 34.5; hind foot, 6.6; ear, 12.5; tibia, 15.5; fore-arm, 35; inter-orbital breadth, 3.6; greatest cranial breadth, 6.9; maxillary tooth row, 5.5; mandibular tooth row, 6.0; mandible, 10.8 mm.

11. HESPEROPTENUS BLANFORDI (DOBSON).

1 ♂. Kao Nawng, Bandon, N.E. Malay Peninsula, 1,400 feet. June, 1913.

Inter-orbital breadth, 4.5; greatest cranial breadth, 6.0; maxillary tooth row, 4.1; mandibular tooth row, 4.6; mandible, 8.4 mm.

12. EPTESICUS PACHYOTIS (DOBSON).

Vesperugo pachyotis, Dobson, *Journ. Asiat. Soc. Bengal*, p. 211 (1871); *id. Cat. Asiat. Chir.*, p. 104 (1876); *Blanford, Faun. Brit. Ind.*, p. 30 (1888).

1 ♀. Kao Nawng, Bandon, N.E. Malay Peninsula, 1,400 feet. June, 1913.

The types from the Khasia Hills, Assam, seem to have remained unique until the present specimen was obtained and the genus has not hitherto been recorded from the Malayan region.

Head and body \pm 59; tail, 41; hind foot, 10; ear, 15.5; tibia, 15.3; fore-arm, 41.5 mm.

Skull.—Condylar-basal length \pm 15.9; palatal length, 7.9; maxillary tooth row, 6.1; mandibular tooth row, 6.8; mandible, 13.2 mm.

13. RHINOLOPHUS BORNEENSIS. (?)

1 ♀. Kao Nawng, Bandon, N.E. Malay Peninsula, 1,400 feet. June, 1913.

A single specimen of a leaf-nosed bat belonging to this genus does not agree with the diagnosis of any form hitherto recorded from the Malay Peninsula. From its dimensions it would appear to come closest to *R. b. spadix*, Miller, from the Natunas and Karimata Islands.

Ears, length, 18.0; fore-arm, 45.0; 3rd metacarpal, 33.0; III¹, 14.5; III², 20.0; 4th metacarpal, 34.3; IV¹, 11.2; IV², 13.0; 5th metacarpal, 34.3; V¹, 11.7; V², 12.5; tail, 23.5; lower leg, 18.5; foot with claws, 9.0 mm.

Skull.—Greatest length, 19.3; mastoid width, 9.4; cranial width, 8.44; zygomatic width, 10.0; supra-orbital length, 5.4; breadth of nasal swellings, 5.3. Mandible, 13.0; upper teeth, 7.4; lower teeth, 7.7 mm.

14. CELOPS ROBINSONI. BONH.

Bonhote, Journ. Fed. Malay States Mus., iii, p. 4 (1908).

1 ♂, 1 ♀. Kao Nawng, Bandon, N.E. Malay Peninsula, 1,400 feet. June, 1913.

Captured in tent at night. The locality of the type (only specimen known hitherto) is the foot of Gunong Tahan, Pahang.

¹ Male example. ² Female example.

Head and body $\pm 40^1$, 37.5^2 ; fore-arm, 40.5, 38.2; tibia, 14.6, 15.3; ear, 11.5, 12.5. Front of canines to post-occipital extremity, 16.5, 16.1; occipito-sinual length, 13.3, 12.9; cranial length, 10.0, 10.1; cranial breadth, 7.9, 7.6; zygomatic breadth 7.0, 6.8; greatest rostral breadth, 4.0, 3.9; palatilar length, 6.2, 6.0; maxillary tooth row, 5.8, 5.7; mandibular tooth row, 6.1, 5.9; mandible, 9.6, 9.3 mm.

15. *PETAURISTA NITIDA* CICUR. ROB. & KLOSS.

Robinson and Kloss, Ann. Mag. Nat. Hist. (8) xiii, p. 223 (1914).

8 ♂, 1 ♀. Ban Kok Klap, Bandon, N.E. Malay Peninsula. June, July, 1913.

The large series of this flying squirrel obtained are quite constant in the characters which differentiate the form from *P. n. melanotus* from the remaining parts of the Peninsula.

The colour is rich chestnut not bay and the hairs of the back have marked black tips. The black on the hands and feet and round the ears is more extensive and the postorbital processes of the skull are longer and broader than in the southern race.

Very common in the orchards round Ban Kok Klap, feeding on the durian trees the fruit of which was just ripening at the time of our visit.

No less than five specimens were shot on one tree within half an hour. All the specimens appeared to be rutting.

It is curious that this district should produce so distinct a form of flying squirrel, the more so as individuals from Trang a hundred miles to the south belong to *P. n. melanotus* as do also skins collected by Finlayson and ascribed to Bangkok, though this locality is open to doubt.

(For measurements see p. 123.)

16. *RATUFA MELANOPEPLA* PENINSULÆ. MILLER.

Ratufa melanopepla peninsulæ, Miller, *Smithsonian Misc. Coll.* 61. No. 21, p. 25 (1913).

♀. Kao Nawng, Bandon, N.E. Malay Peninsula, 1,400 feet. June, 1913.

♀. Ban Kok Klap, Bandon, N.E. Malay Peninsula. July, 1913.

Not particularly common at either station.

Agree in dimensions with *R. m. peninsulæ* from Trang, in no way approaching in size *Ratufa phaeopepla*.³ Miller, from Southern Tenasserim. A re-examination of the twelve specimens forming the type series of *R. melanopepla* originally stated to have come from Trang shows that the type and three other individuals which differ noticeably from the remainder were taken on Telibon Island off the coast; the name *R. melanopepla* must therefore be restricted to specimens from that locality while ¹ mainland animals from Bandon southwards will be known as above. In colour they do not differ from the form from the adjacent islands but are larger.

(For measurements see p. 123.)

¹ Male example. ² Female example. ³ Miller, *Smithsonian Misc. Coll.*, vo. 61, No. 21, p. 25. ⁴ Miller loc. cit.

17. *SCIURUS ERYTHRÆUS RUBECULUS*. MILLER.

Sciurus rubeculus. Miller, *Smithsonian Misc. Coll.*, vol. 45, p. 22 (1903).

7 ♂, 1 ♀. Kao Nawng, Bandon, S.W. Siam, 3,500 feet. 24-26th June, 1913.

The eight specimens enumerated above, all collected within a few hundred yards of each other and in a period of three days, are in very variable pelage, ranging from an individual in which the whole under surface, except a narrow median line and the chin and throat, is mahogany red to one in which the latter colour is merely represented by two faint lateral streaks on the belly, all the hairs of which are otherwise annulated. The disappearance of the mahogany red is also correlated with a reduction in the intensity of the buffy orange suffusion on the upper surface and with a darkening of the tail, in which the black annulations become more predominant. The changes are obviously seasonal and not individual, the same mutations being observed in the race from Formosa, the names *Sc. thaiwanensis*, *Sc. th. centralis* and *Sc. th. roberti* having been founded on them by Bonhote (*Ann. Mag. Nat. Hist.* (7) vii, pp. 165, 166) the latter two of which will have to be suppressed.

The form from the mountains of the central part of the Malay Peninsula, *Sc. erythræus youngi* [*Ann. Mag. Nat. Hist.* (8) xiii, p. 224 (1914)] has good claims to subspecific separation. It is decidedly duller in colour, distinctly smaller and, as the very large series in the Federated Malay States Museums shows, has no seasonal change of pelage.

(For measurements see p. 123.)

18. *SCIURUS HIPPIURUS*, Is. GEOFFR.

1 ♂, 1 ♀. Kao Nawng, Bandon, N.E. Malay Peninsula, 1,400 feet. June, 1913.

Agreeing exactly with specimens from other parts of the Malay Peninsula. The present locality is the most northerly on record, the species not being yet known from Tenasserim.

(For measurements see p. 123.)

19. *SCIURUS CONCOLOR MILLERI*, ROB. & WROUGHTON.

Sciurus epomophorus milleri, *Robinson and Wroughton, Journ. Fed. Malay States. Mus.*, iv, p. 233 (1911).

3 ♂, 5 ♀. Ban Kok Klap, Bandon, N.E. Malay Peninsula. June, July, 1913.
Very common in kampong land.

These squirrels belong to the section of the species with a clear black tail tip, and with brighter colour patches on the shoulders and thighs, though in some specimens these are not very obvious.

They are very distinct from the southern *Sc. concolor* and from the island forms *Sc. c. epomophorus* and related races but they are

not very clearly defined from *Sc. c. darisoni* from Tavoy and Southern Tenasserim. They can be exactly matched by topotypes of *Sc. c. milleri* from Trang, collected in December.

(For measurements see p. 123.)

20. *SCIURUS VITTATUS MINIATUS*.

Sciurus notatus miniatus, Miller, *Proc. Acad. Sci. Washington*, ii, p. 79 (1900).

2 ♂, 3 ♀. Kao Nawng, 1,200-1,500 feet. 15-26th June, 1913.

The above series agree closely with topotypes from Trang from which the present locality, which is the most northerly recorded for the race, is geographically not far removed.

As noted elsewhere* this squirrel, which in the Western Malay States is largely a denizen of cultivated land, is in the north-east of the Peninsula strictly a jungle haunting species, having been displaced from the villages and orchards by the local forms of *Sc. concolor*, a larger and heavier animal. In the jungle on Kao Nawng it was by no means common.

(For measurements see p. 123.)

21. *SCIURUS TENNIS SURDUS*. MILLER.

Sciurus tennis surdus, Miller, *Proc. Acad. Sci. Washington*, ii, p. 80 (1900).

2 ♀. Kao Nawng, Bandon, N.E. Malay Peninsula, 1,400 feet. June, 1913.

2 ♀. Do. do. 3,500 feet. June, 1913.

Quite identical with topotypes from Trang.

Sciurus tennis appears to be peculiarly sensitive to the influence of elevation. The mountain form of the race occurring in Borneo is different from that found in the lowlands and the same is the case with Sumatran specimens, while *Sc. t. tahan* from the mountains of the Malay Peninsula is very distinct from the typical form, found on the lower slopes of the same hills.

(For measurements see p. 123.)

22. *SCIURUS TENNIS GUNONG*. *subsp. nov.*

A mountain form of *Sciurus tennis*, differing from *Sciurus tennis surdus*† Miller from Trang in its larger size, darker upper surface and buffy washed lower parts. Separable from *Sciurus tennis tahan*, Bonhote‡ by its smaller size, slightly paler upper parts and by the absence of the rich buffy suffusion on the inner side of thighs and the inguinal region.

* Fascic, Malay, Zool. I, p. 22 (1903). † Miller, loc. cit. supra. ‡ Bonhote Journ. Fed. Malay States Mus. III, p. 6 (1909).

MEASUREMENTS.—Collector's external measurements (taken in the flesh):

Head and body, 140 (160) mm.; tail, 122 (137); hind foot, 33 (38); ear, 12 (15).

Skull.—Greatest length, 40.0 (43.8); condylo-basilar length, 33.0 (36.0); inter-orbital breadth, 12.7 (13.8); zygomatic breadth, 23.0 (24.7); cranial breadth 19.0 (20.0); median length of nasals, 10.8 (12.0); distema, 8.9 (10.1); upper molar series including mm.³ 7.2 (8.3) mm.

SPECIMENS EXAMINED.—Five, from the type locality.

(For measurements see p. 124.)

TYPE.—Adult male (skin and skull) No. 129/13, Federated Malay States Museum, collected on Kao Nawng, Bandon, S. W. Siam, 3,500 feet. By H. C. Robinson and E. Seimund, 25 June, 1913. Original No. 5656.

Measurements in parentheses are those of an adult male *Sciurus tenuis tahan* from the Teku Plateau, Gunong Tahan, Pahang, Federated Malay States Museum, No. 1833/11.

23. *SCIURUS ROBINSONI*. BONH.

Sciurus robinsoni, Bonhote, *Fascic. Malay. Zool.* III, p. 24, pl. 1 (1903).

1 ♀. Kao Nawng, Bandon, N.E. Malay Peninsula, 1,400 feet. 27th June, 1914.

The large series of the reputed southern forma. *Sc. robinsoni alacris*, Thos. now available shows that the differential characters relied on are by no means constant.

(For measurements see p. 124.)

24. *TAMHOPS MACCLELLANDI NOVEMLINEATUS*. MILLER.

Sciurus novemlineatus, Miller, *Proc. Biol. Soc. Washington*, xvi, p. 147 (1903).

3 ♂, 2 ♀. Ban Kok Klap, Bandon, N.E. Malay Peninsula. June, July, 1913.

Do not differ from topotypes from Trang.

In the Federated Malay States this squirrel is strictly a mountain form but in Bandon it was quite common at low elevations.

(For measurements see p. 124.)

25. *LARISCUS INSIGNIS* SUBSP. *JALORENSIS*. BONH.

Funambulus peninsulæ, Miller, *Smiths. Misc. Coll.*, vol. 45, p. 25 (1903).

1 ♂ ad. Kao Nawng, Bandon, N.E. Malay Peninsula. 3,500 feet. June, 1913.

2 ♂ ad., . . ad. Do. do. 1,200-1,500 feet. June, 1913.

The above series, which are all old animals, confirms the statement already made elsewhere, that with the exception of examples from the extreme south of Johore and from Singapore Island no constant difference exists between specimens of this genus from the extreme north of its range and from the remainder of the Malay Peninsula.

(For measurements *see* p. 124.)

26. MENETES BERDMOREI. BLYTH.

cf. Thomas, *Journ. Nat. Hist. Soc. Bombay*, xxiii, p. 23 (1914).

5 ♂, 5 ♀, 3 imm. Ban Kok Klap, Bandon, N.E. Malay Peninsula. June, July, 1913.

The first examples of this species which have been received from the Malay Peninsula, south of Tenasserim.

Mr. Oldfield Thomas has recently (*loc. cit. supra*) revised the races of this squirrel, has defined five sub-species of this animal, two of them from the neighbourhood of the Malay Peninsula—viz., *M. berdmorei berdmorei*, from Martaban to Mergui and the other *M. b. mouhoti*, Gray, from Southern Siam. These forms only differ in that the former is strongly washed with buffy below while the latter has the under surface white or whitish; they agree with each other in having the median dorsal and upper lateral blackish lines present but inconspicuous.

The series from Bandon, all collected at the same place and within a period of a few days, are very variable in this last respect, the variability not depending on age. In one or two the upper black markings are relatively inconspicuous but in the greater number are most clearly and strongly marked. Disregarding extremes the series closely resembles above the four specimens from Martaban and Mergui in the Indian Museum, Calcutta (Cat. Mamm. Ind. Mus. 1891). As regards the lower parts, however, they are much less yellow but it is possible that the Indian Museum specimens, of which none are less than 40 years old, have undergone deterioration due to age and exposure.

The undersurface of some of the peninsular specimens is pale ivory white, in others it is suffused on the abdomen and thighs with ochraceous or orange buff. They thus appear to be intermediate between animals of the two adjacent races, but since the majority of the specimens possess the more richly coloured undersurface the series had for the present, better stand under the name of the parent race.

Strictly a ground species and only met with in the villages and in the scrub immediately surrounding the village rice-fields.

(For measurements *see* p. 124.)

27. *DREMOMYS RUFIGENIS* BELFIELDI.

Funambulus rufigenis belfieldi, *Bonhote, Journ. Fed. Malay States Mus.*, iii, p. 9, pl. I. (1908).

♂. Kao Nawng, Bandon, N.E. Malay Peninsula. 1,200-1,500 feet. June.

♀. Kao Nawng, Bandon, N.E. Malay Peninsula. 3,500 feet. June.

These specimens exactly agree with numerous skins from the Selangor mountains, the typical locality of the race, and differ from a co-type of *D. rufigenis*, Blanford, in being generally duller in colour, especially on the cheeks, and in having the hind-feet quite concolorous with the back. Bonhote in his description has reversed these facts and his letterpress applies to *D. rufigenis* and not to *D. r. belfieldi* at all, though the plate correctly represents the latter form. The colour of the silky patch behind the ears appears to be a character of little importance.

The Bandon specimens appear very slightly smaller than those from the mountains of the Malay Peninsula further south, but the differences are insignificant and are quite possibly individual.

In Selangor this squirrel is confined to the ridges of the higher mountains where it lives a partially terrestrial existence amongst the giant *Pandanus* and the zerophytic plants clothing the summits. In Bandon on the other hand it descends the hills and is found on the ground amongst the ordinary tropical vegetation of a submontane forest.

(For measurements *see* p. 124.)

28. *RHINOSCIURUS TUPAIODES*, BLYTH.

Rhinosciurus peracer, *Thos. and Wrought., Journ. Fed. Malay States Mus.* iv, p. 120 (1909).

1. Kao Nawng, Bandon, N.E. Malay Peninsula, 1,400 feet. June, 1913.

2, 2. Ban Kok Klap, Bandon, N.E. Malay Peninsula. June, 1913.

Thomas and Wroughton (*loc. cit. supra*) separated a specimen from Perak from animals occurring in Selangor, which they identified as *R. tupaoides*, under the above name, on the ground that while the tails of the latter were washed with whitish, the hairs of the former were tipped with buffy ochraceous.

Examination of the series of 26 long-snouted squirrels of the Peninsula in the Federated Malay States Museums (by far the largest in existence) shows that local races founded on these distinctions cannot at present be maintained. Localities in the above series range from Bandon in the north to Negri Sembilan and Southern Pahang in the south, and individuals with yellowish and whitish washed tails occur both in the south and in the north. It is possible, however, that when larger collections have been made, it will be found that the majority of the animals living in the south will be seen to have tails with the paler colouration and if that is the case the name *peracer* can be revived.

(For measurements *see* p. 124.)

Measurements of squirrels from Bandon Province, N.E. Malay Peninsula :

Species.	Locality.	N. M. No.	Sex.	Head and body.			length of skull.	Condylar-basis length.	Zygomatic breadth.	Inter-orbital breadth.	Breadth across post-orbital process.
<i>Petaurista nitida</i> cicur	Ban Kok Klap	52/13	♀	422	523	77	71.5	63.4	48.6	15.3	37.8
"	"	53/13	♂	420	482	76	72.0	62.0	48.3	14.2	39.6
"	"	54/13	♂	416	512	78	74.4	66.0	47.3	15.0	39.0
"	"	55/13	♂	397	478	77	70.6	61.5	48.8	15.9	38.0
"	"	56/13	♂	422	518	78	73.8	64.0	49.8	14.9	36.3
"	"	57/13	♂	393	524	75	71.6	62.4	46.7	15.4	...
"	"	58/13	♂	417	486	77	71.0	62.4	48.0	14.0	37.4
"	"	59/13	♂	394	522	81	73.0	63.2	47.8	15.3	37.2
"	"	60/13	♂	392	524	81	73.0	64.4	47.5	16.0	38.9
<i>Eutufa melano-pepla</i> peninsulæ	Kao Nawng...	250/13	♀	342	455	75	72.8	61.2	45.8	29.3	...
"	Ban Kok Klap	265/13	♀	363	462	79	71.6	58.2	45.5	27.5	...
<i>Scuirus ræus</i> rubeculus	Kao Nawng, 3,500 ft.	66/13	♂	210	200	44	53.4	45.2	32.1	18.9	...
"	"	67/13	♂	213	210	46	54.9	46.2	32.8	19.1	...
"	"	68/13	♂	205	205	45	53.8	45.0	31.3	18.8	...
"	"	69/13	♂	210	208	46	54.4	46.4	32.2	20.1	...
"	"	70/13	♂	210	208	46	55.1	47.0	33.2	20.1	...
"	"	71/13	♂	213	210	47	53.8	45.2	32.5	19.7	...
"	"	72/13	♀	220	200	48	54.7	46.0	32.8	19.5	...
"	"	73/13	♂	210	212	47	53.8	45.0	32.4	19.2	...
<i>Scuirus hippurus</i>	Kao Nawng, 1,400 ft	132/13	♂	254	264	57	55.0	47.0	32.7	17.4	...
"	"	133/13	♀	231	261	57	54.1	46.1	31.3	18.7	...
<i>Scuirus concolor</i> milleri	Ban Kok Klap	178/13	♀	214	216	48	53.0	45	30.5	18.3	...
"	"	179/13	♂	223	221	48	54.0	46.5	...	18.0	...
"	"	180/13	♂	217	226	46.5	53.7	45.5	30.5	18.0	...
"	"	181/13	♀	213	204	47.5	53.0	45	31.7	19.0	...
"	"	182/13	♀	227	235	50	55.3	46.5	...	18.0	...
"	"	183/13	♀	220	203	48	...	46.5	32.0	17.7	...
"	"	184/13	♀	210	206	45	53.3	45	31.7	20.3	...
"	"	521/13	♂	224	228	50	55.0	46.6	30.3	17.0	...
<i>Scuirus vittatus</i> miniatus	Kao Nawng, 1,200-1,500 ft.	31/13	♀	190	171	42	48.3	40.6	28.9	17.2	...
"	"	32/13	♀	191	182	43	49.1	43.0	29.7	18.2	...
"	"	33/13	♀	192	182	43	49.3	41.4	29.8	17.3	...
"	"	34/13	imm.	167	174	46	45.2	39.0	26.7	16.4	...
"	"	35/13	♂	194	179	46	49.1	42.0	30.0	18.4	...
<i>Scuirus tenuis</i> surdus	"	123/13	♀	136	109	30.5	35.2	...	21.7	12.9	...
"	"	124/13	♀	131	...	32	36.7	30.0	21.3	12.3	...
"	Kao Nawng, 3,500 ft.	128/13	♀	135	111	28	37.3	30.4	...	12.2	...
"	"	131/13	♀	124	115	30	37.2	30.1	21.7	12.6	...

Species.	Locality.	S. M. No.	Sex.	Head and body.	Tail.	Hind foot.	Greatest length of skull.	Condyle-basilar length.	Zygomatic breadth.	Inter-orbital breadth.
<i>Sciurus tenuis</i>	Kao Nawng,	125/13	+	135	113	30	39.0	31.8	23.1	..
gunong	3,500 ft.	126/13	+	132	117	32	39.2	31.9	...	..
"	"	127/13	♂	133	122	33	40.0	32.2	22.1	12.3
"	"	129/13	♂	140	122	33	40.0	33.0	23.0	12.7
"	"	130/13	+	135	120	32	39.3	31.4	22.5	12.3
<i>Sciurus robinsoni</i>	Kao Nawng,	522/13	+	122	103	31.5	34.5	28.8	20.8	11.0
	1,400 ft.									
<i>Tamias maclellandi novemlineatus</i>	Ban Kok Klap	47/13	+	99	101	23	30.2	24	28.0	11.1
"	"	48/13	♂	117	...	24.5	31.6	25.6	29.7	11.9
"	"	49/13	♂	107	108	24	31.4	25.7	29.1	11.9
"	"	50/13	♂	114	113	25	32.4	25.7	29.6	12.0
"	"	51/13	+	102	108	25	31.2	23.3	28.0	11.7
<i>Lariscus insignis jalorensis</i>	Kao Nawng,	27/13	♂	177	95	43	49.3	40.0	27.9	13.3
"	3,500 ft.									
"	Kao Nawng,	28/13	♂	191	102	45	50.4	41.1	27.7	13.4
"	1,200 - 1,500 ft.									
"	"	29/13	♂	182	103 imp.	43.5	49.1	40.3	27.7	13.5
"	"	30/13	♀	168	96	43	...	39.8	27.3	13.5
<i>Menetes berdi morei</i>	Ban Kok Klap	101/13	♂	195	142	41.5	47.7	40.4	26.0	13.5
"	"	102/13	♀	192	133	40.5	48.7	41.6	26.7	12.1
"	"	103/13	♂	194	128	43	50.8	43.5	27.0	13.0
"	"	104/13	♂	191	136	41	49.1	42.5	25.3	12.6
"	"	105/13	♀	193	148	41	49.0	41.6	25.3	12.7
"	"	106/13	♀	195	137	41	49.5	41.8	26.8	12.8
"	"	107/13	♀	192	145	41	48.6	...	25.8	12.1
"	"	108/13	♂	183	137	41	...	...	...	...
"	"	109/13	♂	196	149	42	50.0	42.8	26.0	12.5
"	"	113/13	♀	199	135	41	49.5	42.0	27.0	12.5
<i>Dremomys rufigenis belfieldi</i>	Kao Nawng,	120/13	+	191	150	44	54.1	43.2	29.0	15.7
"	1,200 - 1,500 ft.		sub-ad.							
"	Kao Nawng,	121/13	+	190	135	45	55.2	44.2	29.9	16.0
"	3,500 ft.									
<i>Rhinosciurus tupaoides</i>	Kao Nawng,	322/13	♂	211	114	37	57.0	49.5	27.3	12.6
"	1,400 ft.									
"	Ban Kok Klap	323/13	♂	196	116	40.5	54.2	47.5	26.0	13.2
"	"	324/13	♂	206	126	41.5	56.0	48.2	26.7	12.6
"	"	325/13	♀	202	107	41	55.4	48.5	26.9	13.3
"	"	326/13	♀ imm.	199	134	41	...	44.8	...	12.7

29. EPIMYS VOCIFERANS (MILLER).

1 ♀. Ban Kok Klap, Bandon, N. E. Malay Peninsula. June, 1913.

2 ♂. Kao Nawng, Bandon, N. E. Malay Peninsula, 3,500 feet. June, 1913.

1 ♂, 2 ♀. Kao Nawng, Bandon, N. E. Malay Peninsula, 1,400 feet. June, 1913.

Agreeing well with topotypes from Trang.

(For measurements *see* p. 126.)

30. *EPIMYS SURIFER* (MILLER).

5 ♂, 7 ♀. Kao Nawng, Bandon, N.E. Malay Peninsula, 1,400-3,500, feet. June, 1913.

Common all over the mountain, the specimens from high levels not differing from those trapped at the foot of the hill.

(For measurements *see* p. 126.)

31. *EPIMYS ORBUS*. ROB. AND KLOSS.

Ann. Mag. Nat. Hist. (8) xiii, p. 228 (1914).

4 ♂, 1 ♀, Kao Nawng, Bandon, N.E. Malay Peninsula. 3,500 feet. June, 1913.

There is little to add to our original description of this rat which is very distinct from any Malayan species hitherto described, though a closely allied form is met with in the mountains of West Sumatra. As far as can be ascertained from the single female skin available the mammary formula seems to be one pectoral and two inguinal pairs, therein differing from that given for *Epimys fulvescens* (Gray) by Blanford.

Though we have named the present form binomially there is not the least doubt that it is closely allied to the Indian form *E. fulvescens* from the Himalayas and *E. cinnamomeus*, Blyth from Northern Tenasserim. Of the latter there is a typical specimen in spirit in the Indian Museum, which differs in its less spiny pelage and apparently richer colouration: No reliable conclusions can however be drawn from specimens over 50 years old and until adequate modern material is available it appears safer to regard the present form as a distinct species.

The characters of the infra-orbital plate given by Blanford are of course merely those separating species of the "rattus" section from the bicolor rats with small bullae, typified in the Malayan region by *E. surifer* and its allies.

(For measurements *see* p. 126.)

32. *EPIMYS RATTUS JALORENSIS* (BOHR.).

2 ♂, imm. Ban Kok Klap, Bandon, N. E. Malay Peninsula. June, 1913.

33. *EPIMYS VALIDUS* (MILLER).

1 ♂. Kao Nawng, Bandon, N. E. Malay Peninsula, 1,400 feet. June, 1913.

Miller (*Smithsonian Misc. Coll.* vol. 61, no. 21, p. 19 (1913) has, under the name, *Epimys victor*, recently separated southern peninsular representatives of this species from the typical *E. validus* of Trang on the grounds that the teeth are smaller, the outer anterior tubercle in m^2 and m^3 less developed and the greatest skull length about 60 mm. as compared with 55 mm. in northern animals.

But the type series of *Mus validus* consisted of two individuals only, and as is now shown animals from the Siamese States are as large, if not larger, than the southern forms, while examination of a series of some 30 individuals ranging throughout the Peninsula shows that no reliance can be placed on the absence or otherwise of an anterior outer tubercle as a distinguishing character. *Epimys firmus* of the Rhio Archipelago is also stated to have the molar tubercle lacking but we find it present in four or five individuals out of a series of 15 from the Karimon Islands and Pulau Kundur.

In October, 1911, we described a peninsular rat under the name of *Mus muelleri federis* (Journ. Fed. Malay States Mus. iv, p. 245, 1911) but a comparison of the type with the much larger series of *Epimys validus* now in our possession shows that this name must also be regarded as a synonym of that species.

(For measurements see below.)

Measurements of rats from Bandon Province, N.E. Malay Peninsula :

Species.	Locality.	N. M. No.	Sex.	Head and body.	Tail.	Hind foot.	Greatest length of skull.	Condylar-basilar length.	Zygomatic breadth.	Maxillary tooth row.
<i>Epimys vociferans</i>	Ban Kok Klap	114/13	♀	238	361	44.5	55.0	46.5	24.8	10.0
"	Kao Nawng 1,200-1,500 ft.	115/13	♀	236	354	44.0	56.2	48.0	26.0	10.3
"	"	116/13	♀	234	353	43.5	55.7	47.3	25.8	10.3
"	"	118/13	♂	229	367	44.0	55.9	47.0	25.0	10.0
"	Kao Nawng 3,500 ft.	117/13	♂	230	345	43	55.3	47.0	24.4	9.8
<i>Epimys surifer...</i>	Kao Nawng 1,400-3,500 ft.	36/13	♂	164	180	38	42.2	35.5	18.2	6.8
"	"	37/13	♂	177	195	37	44.0	37.0	19.4	6.3
"	"	38/13	♂	177	184	36	42.2	35.0	18.9	6.2
"	"	40/13	♀	175	188	35	44.6	37.8	19.8	6.7
"	"	41/13	♂	200	195	41	47.0	39.1	20.0	6.9
"	"	42/13	♀	178	190	38	40.0	34.0	17.7	6.8
"	"	43/13	♂	197	213	42	46.3	38.7	19.0	6.2
"	"	45/13	♀	184	204	37	44.4	37.2	18.7	6.8
"	"	46/13	♀	170	190	38	42.8	36.0	19.0	6.4
"	"	119/13	♂	191	203	39	44.7	36.9	18.6	6.4
"	"	285/13	+	183	147	37.5	44.1	36.8	19.1	6.9
"	"	423/13	♀	188	204	38.5	43.8	36.8	19.0	7.2
<i>Epimys orbus</i> ...	Kao Nawng 3,500 ft.	61/13	♂	153	235	32	37.9	31.0	17.0	6.3
"	"	62/13	♂	157	238	33	39.0	32.7	17.5	6.3
"	"	63/13	♂	150	220	30	39.0	32.0	...	6.3
"	"	64/13	♂	158	229	30.5	37.7	30.6	16.3	6.2
"	"	65/13	♀	145	230	31	38.1	32.0	17.1	6.3
<i>Epimys validus</i>	Kao Nawng	122/13	♂	257	323	52	61.0	53.0	30.3	11.1

34. RHIZOMYS SUMATRENSIS (RAFFLES).

Rhizomys erythrognys, *Anderson*, *Proc. Asiat. Soc. Bengal*, p. 150 (1877).

2 ♂ imm. Ban Kok Klap, Bandon, N. E. Malay Peninsula. June, 1913.

Two immature specimens with the permanent molars just coming into place agree sufficiently well with the description of *R. erythrognys*, *Anderson*, which is obviously founded on immature specimens of *R. sumatrensis* as stated by *Blanford*. The figure given by *Anderson*. (*Zool. Res. Yunnan*, pl. XIII) is much too bright with the upper surface bluish steel grey not iron grey as is actually the case.

35. TRAGULUS RAVUS. MILLER.

Miller, *Proc. Biol. Soc. Washington*, xv, p. 173 (1902).

1 ♀. Ban Kok Klap, Bandon, N. E. Malay Peninsula. June, 1913.

Head and body, 435; tail, 78; hind foot, 119; ear, 36.

Skull.—Greatest length, 92.5; greatest breadth, 41.6 mm.

THE ZOOLOGY OF KOH SAMUI AND KOH PENNAN.

I. INTRODUCTION.

By H. C. ROBINSON, C.M.Z.S., M.B.O.U., DIRECTOR OF MUSEUMS, F.M.S.

IN view of the interesting results yielded by the zoological exploration of the Tioman group of islands off the coast of Johore and Pahang on the eastern side of the Malay Peninsula, it was thought that a similar investigation of the islands lying off the Bight of Bandon in the north-east of the Malay Peninsula might prove equally profitable. With the permission of His Excellency the High Commissioner, Malay States, and the Chief Secretary, Federated Malay States, and provided with introductions from the Siamese authorities, an expedition was arranged by the Federated Malay States Museums in the early part of 1913 and large collections of mammals and birds and smaller ones of plants and reptiles were made on the islands.

The collections, though in some ways disappointing, are sufficiently interesting to merit description in detail, and full lists are given in the succeeding pages, which are prefaced by the following short account of the general character of the islands, which have been little visited by Europeans and are hardly, if at all, represented in the local literature.

Koh¹ Samui situated between the parallels of 9° 22' and 9° 34' N. and between longitude 99° 56' and 100° 07' E. is considerably the largest island on the east coast of the Malay Peninsula, being only approached in size by Pulau Tioman. It is situated well within the ten-fathom line and at its nearest, is distant from the mainland about nine miles, this distance being bridged over by a chain of several small islets.

The surface is very irregular, rising to a maximum elevation in the centre of the island of 2,200 feet, several other ranges exceeding 1,500 feet in height. These elevations are mainly disposed in long ridges, running roughly from S.E. to N.W., having large areas of flat or gently undulating land, between the hills, which are very steep.

On the east large areas are quite flat, having the appearance of recent elevation; near the coast they are sandy and devoted to the cultivation of coconuts, but further inland the soil is better and a considerable amount of swamp rice is grown. On the north, west and south, the ground is more broken and the hilly ground comes quite down to the coast. There are several streams of permanent water, some of considerable size, but in the dry season, which was the time of our visit, those on the eastern side were much diminished in crossing the sandy coastal plain, and potable water was scarce and poor in quality.

¹ Koh or Kaw (Siamese) = Island.

The hill sides, to a very considerable height, have been much denuded of their original timber, little control being exercised over the local population, which annually destroys much jungle for the plantations of hill rice, which, when abandoned, are overgrown with a worthless secondary growth of bamboo and thorny shrubs.

The population is large, and was said by the local magistrate to exceed 8,000 people, who subsist by the growth of rice and fruit, large quantities of coconuts being exported to Bangkok, and fruit, principally arecanuts and mangoes, to Bandon. Many pigs are reared by the local population but little fishing is done and the island afford but few supplies to the European visitor, even bananas and fowls being scarce and hard to obtain. On the north coast a small lode of wolfram ore has of late years been worked but has not proved commercially successful. The coasts of the island seems to be formed of schists, gneisses and other metamorphic rocks, but the central core and the taller hills are granite.

Koh Pennan,¹ situated to the north of Koh Samui, separated from it by a channel about eight miles wide carrying a maximum depth of nine fathoms, is considerably smaller than the latter island, being roughly elliptical in shape with a long diameter of about ten miles and a short one of about six. It rises to about the same height, but the surface, generally speaking, is more rugged and there is not nearly the same proportion of flat land, except on the south coast. The population is considerably smaller but a large amount of copra and coconuts are produced, which are shipped to Bangkok. As in Koh Samui, the population is almost exclusively Siamese, though there are a certain number of trading Chinamen from Bangkok and the adjacent mainland. Malay is not spoken or understood on either island and we had great difficulty in obtaining an interpreter who knew even a few words of the language.

We collected at three localities on Koh Samui, at :

- (1). Klong Pah Yie towards the northern end of the west coast where we stayed from May 6th to May 13th, the surrounding country being mainly coconuts, rice fields, grazing ground or secondary jungle ;
- (2) On the headwaters of a stream rising in the centre of the island, in the middle of the only considerable area of virgin jungle, on the island, where we built a camp and collected from May 15th to May 17th ; and
- (3) On a bay near the N.E. coast which proved singularly uninteresting and unhealthy and at which we only stopped from May 18th to May 23rd.

On Koh Pennan we had one station only, near the S.W. corner of the island, where we established ourselves in a comfortable tin-roofed "sala" built by a pious Siamese, staying from May 24th to June 1st when we set sail for the mainland of Bandon which we reached after a rather irksome journey of three days.

¹ Known also as Pungun and Pungunn.

II. MAMMALS.

By H. C. ROBINSON, C.M.Z.S., AND C. BODEN KLOSS, F.Z.S.

The mammalian fauna of Koh Samui and Koh Pennan proved disappointing and the islands are noteworthy rather for the species that are not represented than for those that do actually occur.

It may safely be asserted that they have derived their fauna from those districts of the Peninsula immediately adjacent: for instance the only squirrels present are forms of the continental *Sc. concolor* and a species of Giant squirrel closely related to the mainland form, *R.m. peninsulæ*. No *Rhinosciurus* is known nor are races of *Sciurus tenuis*, *Sciurus vittatus* or *Sc. nigrovittatus*. Flying squirrels, a characteristic feature of the fauna of many of the local islands, may definitely be stated to be absent, and the same is the case with two other characteristic flying mammals—viz., *Galeopterus* and bats of the *spectrum* section of *Pteropus*, which are known from almost every other island of the China Sea. Indeed for some obscure reason bats of all species were practically absent and, with the exception of the universally distributed *Cynopterus*, only one other individual, probably an *Emballonure*, was even seen. Wild pigs were reported on both islands but they were almost certainly only feral specimens of the local Siamo-Chinese breed.

Leaf-monkeys occurred on Koh Samui but have now been eaten out. The Kra (*Macaca irus*) was found on both islands but was rare and shy, while *M. nemestrina* is stated on native authority to be found on Koh Pennan. Captive specimens were seen but their provenance was uncertain and they had not improbably been brought from the adjacent mainland.

Mouse-deer were absent from both islands; barking-deer occur on Koh Samui (not on Koh Pennan) but are assiduously shot by the native population; an immature specimen was obtained by us, but affording no differential characters, was not preserved.

Otters were common and the duyong is occasionally found in shallow bays on the western side of Koh Samui.

1. PRESBYTIS OBSCURA HALONIFER, CANTOR.

3 ♂, 2 ♀, 3 ♂ immature.

No monkeys of this genus occur on Koh Samui, though they were comparatively common but very wild on Koh Pennan.

The series of five adults differ considerably *inter se*. Two old females in somewhat worn pelage have the pileum strongly tinged with yellowish, a marked median bronzy line on the back, and a pale yellowish-white area at the base of the thighs. The males are darker and greyer, the yellowish tinge is absent from the cap and the bronzy median line is practically absent in two specimens though just visible in the third.

Like the other island races from the islands of the Malay Peninsula, they are darker than the northern mainland form *P. obscura halonifer*, with which for the present we unite them.

A young male in the golden stage of pelage has the fur between the shoulders distinctly curly.

(For measurements *see below*.)

2. MACACA IRUS. CUVIER.

2 ♂. Koh Samui.

2 ♀. Koh Pennan.

The two males from Koh Samui are practically indistinguishable from examples obtained in the Federated Malay States: the annulations of the hairs are well marked over body and limbs.

The females from Koh Pennan are in worn pelage and most closely resemble animals in similar condition from Penang Island: the annulations have almost disappeared.

The Koh Samui animals and those from the Federated Malay States, with which they are compared, were shot inland in high jungle: the examples from Penang and Koh Pennan are sea-shore dwelling individuals and as they present the same appearance and differ from others it is probable that this may be traced to the effect of salt air and greater exposure to light.

(For measurements *see below*.)

Measurements of monkeys from Koh Samui and Koh Pennan:

Species.	Locality.	N. M. No.	Sex.	Head and body.	Tail.	Hind foot.	Greatest length skull.	Basal length.	Zygomatic breadth.	Maxillary teeth row.
<i>Presbytis obscura halonifer</i>	Koh Pennan...	536/13	♂	536	709	153	101.5	73.6	76.0	34.0
"	"	539/13	♂	530	750	163	—	—	—	—
"	"	541/13	♂	541	722	152	99.0	72.0	78.5	33.0
"	"	535/13	♀	491	695	145	—	—	—	30.0
"	"	537/13	♀	505	693	149	90.6	65.6	69.0	28.0
<i>Macaca irus</i> ...	Koh Samui ...	544/13	♂	437	502	119	115.7	83.0	87.2	36.0
"	"	545/13	♂	423	457	125	114.0	82.0	79.5	36.0
"	Koh Pennan...	542/13	♀	391	442	114	102.0	70.7	±71.0	35.3
"	"	543/13	♀	400	411	109	97.5	66.0	66.0	33.0

3. PARADOXURUS MINOR. BONHOTE.

Fascic Malay., Zool. I, p. 9 (1903).

1 ♀, 1 ♀ imm.

These specimens appear to be members of the species known as *P. minor* with which we are familiar (though at present we have no

topotypes for purposes of comparison). Though the body dimensions appear to be a little larger the cranial measurements and external appearance of the adult female are practically those of the type. The convergence on the neck and crown of the black dorsal stripes is particularly notable in both examples.

Measurements: head and body, 580; tail, 443; hind foot, 73; ear, 45. Skull: greatest length, 96.2; condylobasal length, 95.3; basal length, 95.3; palatal length, 41.7; extension of palate beyond m^3 , 2.2; breadth of palate between canines, 10.1; between carnassials, 14.8; rostral breadth, 17.6; inter-orbital breadth, 16.4; post-orbital breadth, 12.2; zygomatic breadth, 54; greatest cranial breadth, 34.5; maxillary tooth row (c.-m¹), 34; mandibular tooth row, 40; length of mandible, 71.

4. TUPAIA FERRUGINEA OPEROSA.

Robinson and Kloss, Ann. and Mag. Nat. Hist. (8), vol. xiii, p. 233 (Feb. 1914).

Koh Pennan, 33 examples.

This form exhibits close relationship with *T. belangeri* of Tenasserim and more northern areas, while such examples of the Bandon animal as have been collected show, as we have pointed out elsewhere, less differentiation from *T. ferruginea* of the southern portion of the Peninsula, as far as colour is concerned, than does *F. f. wilkinsoni* which occurs on the west coast between the latitudes of the above-mentioned places.

(For measurements *see below*.)

5. TUPAIA FERRUGINEA ULTIMA.

Robinson and Kloss, tom. cit., p. 234.

Koh Pennan 14 examples.

Differ from *T. f. operosa* in the possession of duller pelage and shorter rostrum and thus, still more than that race, approaches the continental species *T. belangeri*.

(For measurements *see p. 133*.)

Measurements of *Tupaia* from Koh Samui and Koh Pennan:

Species.	Locality.	N. M. No.	Sex.	Head and body.	Tail.	Hind foot.	Greatest length of skull.	Greatest breadth of cranial	Pip. of premaxillaries	lacrimal notch.
<i>Tupaia ferruginea operosa</i>	Koh Samui	86/18	♂	179	165	43	50.5	19.8	20.3	
"	"	88/13	♀	181	144	39.5	48.0	19.0	18.8	
"	"	89/13	♂	170	169	38	48.1	18.6	18.9	
"	"	91/13	♂	173	174	40.5	48.5	19.0	19.3	

Species.	Locality.		Z. M. No.	Sex.	Head and body.	Tail.	Hind foot.	Greatest length of skull.	Greatest cranial breadth.	Pip of premaxillaries lachrymal notch.
<i>Tupaia ferruginea operosa</i>	Koh Samui	Type	93/13	♀	163	155	40	47.2	18.9	18.8
"	"		428/13	♂	168	166	40	48.4	19.1	19.1
"	"		432/13	♂	156	—	40	49	18.9	18.8
"	"		435/13	♂	166	166	40	48.4	19.1	19.2
"	"		437/13	♀	170	165	40	47	18.5	18.5
"	"		438/13	♀	160	154	40	46.2	18.0	17.8
"	"		439/13	♀	162	160	40.5	46.8	18.8	18.2
"	"		440/13	♂	173	—	40	50.0	19.0	20.0
<i>Tupaia ferruginea ultima</i>	Koh Pennan		90/14	♀	162	161	37.5	46.0	19.3	18.0
"	"	Type	95/13	♀	166	162	38.5	45.8	19.0	17.6
"	"		96/13	♀	165	163	37.5	45.8	18.9	17.8
"	"		97/13	♂	172	175	39.5	47.2	19.2	18.6
"	"		98/13	♂	174	170	38.5	47.3	19.0	18.7
"	"		99/13	♀	161	164	40	47.2	18.7	19.0
"	"		100/13	♂	168	166	39	48.2	19.0	19.0
"	"		267/13	♀	165	166	38	45.0	18.4	17.4
"	"		268/13	♀	163	162	37	46.0	18.6	17.0
"	"		269/13	♀	163	157	36	45.3	18.6	17.5
"	"		270/13	♂	168	165	39	47.3	18.3	18.7
"	"		444/13	♂	168	168	39	46.4	18.8	18.5

6. CROCIDURA NEGLIGENS.

Robinson and Kloss, tom. cit., p. 232.

1 ♂. Koh Samui.

The single specimen obtained, while about the same size as *C. malayana* of the Malay Peninsula, differs in being of a much paler tint, the pelage being of a neutral grey, slightly washed above with brownish so that at a distance it closely resembles in general tone the "Mouse grey" of Ridgway.

Measurements: head and body, 92; tail, 62; hind foot, 14.7; lar, 10. Skull: palatal length, 9.4; lachrymal breadth of rostrum, 4.2; greatest breadth above molars, 7.0; maxillary tooth row, including incisors, 10.1; mandibular tooth including incisors, 9.0.

7. CYNOPTERUS BRACHYOTIS ANGULATUS, MILLER.

Koh Samui, 8 examples.

Koh Pennan, 11 examples.

Our remarks on *C. b. angulatus* of the mainland (antea) apply even more strongly to these island animals.

(For measurements see p. 134.)

Measurements of *Cynopterus b. angulatus* from Koh Samui :

S. M. No.	357/13	358/13	359/13	360/13	377/13	370/13	376/13
Sex	♀	♀	♀	♀	♀	♂ imm.	♂ imm.
Head and body	97	94	98	98	96	97	90
Tail	13	11	12	14	9	13	10
Hind foot	14.5	14	14	14	13.5	14	13
Ear	21	21	20	20.5	21	20.5	20
Fore-arm	71	68	68	70	69	71	72
3rd Metacarpal	47	45.2	43.6	43.4	44.0	43.4	43.6
III'	30.8	28.7	28.4	27.8	28.3	28.0	27.0
Tibia (approximate)	25.5	25.5	24.8	23.8	24.0	24.0	23.3
Greatest length of skull	32.0	30.7	30.9	32.0	31.3	30.8	30.9
Condyl-basal length	30.3	29.1	29.5	30.1	29.9	29.5	29.4
Zygomatic breadth	19.7	20.0	20.4	21.0	20.0	20.0	19.3
Rostrum	8.0	8.0	7.9	8.0	8.4	8.1	8.5
Mandible	24.6	23.8	23.5	24.0	23.3	23.3	23.8
C-m' crowns	10.8	10.3	10.2	10.0	10.3	10.2	10.1

Measurements of *Cynopterus b. angulatus* from Koh Penman :

S. M. No.	355/13	356/13	361/13	362/13	371/13	353/13	372/13
Sex	♂	♂	♂	♂	♂ imm.	♀	♀
Head and body	99	93	97	98	92	98	99
Tail	13	12	13	15	12	14	12
Hind foot	14	15	13.5	15.5	14	14	14
Ear	20	18.5	20	19	19.5	20	19.5
Fore-arm	73	68	71	73	68.5	71	69.5
3rd Metacarpal	—	44	44.3	45.7	42.6	46	44
III'	28.5	28.5	28.1	29.5	26.6	28.2	28.1
Tibia (approximate)	25.0	24.0	24.3	26.0	22.5	66.8	23.2
Greatest length of skull	31.3	30.4	32.3	32.1	30.4	30.4	32.0
Condyl-basal length	30.0	28.9	30.9	30.7	—	28.5	30.3
Zygomatic breadth	21.5	20.1	20.8	20.9	19.8	19.9	20.3
Rostrum	8.1	7.7	8.0	8.8	8.0	8.6	8.1
Mandible	23.9	23.0	23.2	25.0	23.0	23.7	24.3
C-m' crowns	10.2	10.0	10.3	10.8	10.1	10.0	10.5

S. RATUFA MELANOPEPLA DECOLORATA.

Robinson and Kloss, tom. cit , p. 227.

Koh Samui, 13 examples.

Koh Penman, 1 example.

When we described this race of Giant-squirrel we were unaware that the type locality of *Ratufa melanopepla* was (as Mr. G. S. Miller has recently pointed out¹) the island of Telibon off the west coast of the Peninsula, and not Trang on the mainland as was originally stated by him.

No distinction has been drawn between the colour of the Telibon Island form and that from the mainland with which the present race closely agrees, but in size the animal inhabiting the Bandon Islands appears to be a little smaller than the western insular race and thus considerably smaller than the peninsular animal.

(For measurements see p. 135.)

¹ *Smithsonian Miscellaneous Publications*, Vol. 61, No. 21., p. 25 (Dec. 29, 1913).

Measurements of *Ratufa* from Koh Samui and Koh Pennan:

Name.	Locality.	Number.	Sex.	Head and body.	Tail.	Hind foot without claws.	Greatest length of skull.	Condylilo-basilar length.	Zygomatic breadth.	Inter-orbital breadth.
Ratufa melano-pepla decolorata	Koh Samui, W. Side Type	251/13	♂	328	417	68	68.7	57.1	42.6	26.2
"	"	252/13	♀	319	424	67	70.8	57.8	43.2	24.6
"	" Hills	254/13	♀	319	395	69	66.9	56.9	41.8	27.0
"	" W. Side	255/13	♀	307	429	73	67.6	57.1	41.0	24.1
"	"		sub-ad.							
"	" Hills	256/13	♀	311	394	69	67.8	57.2	41.4	23.9
"	" W. Side	257/13	♀	326	411	72	70.3	58.8	43.0	—
"	"	258/13	♀	315	387	66	67.2	55.2	41.9	25.8
"	"	259/13	♀	318	404	71	69.4	57.7	43.1	26.8
"	"	260/13	♀	293	404	70.5	64.3	53.9	38.2	24.4
"	"		imm.				app.			
"	"	261/13	♂	323	382	70	67.4	56.4	40.4	24.0
"	" Hills	263/13	♂	315	388	69.5	65.8	54.9	42.1	24.5
"	" W. Side	264/13	♂	312	361	66	64.0	53.4	41.1	26.0
"	S. W. Koh Pennan	266/13	♀	323	412	69	70.2	57.1	42.3	26.1

9. SCIURUS CONCOLOR SAMUIENSIS.

Robinson and Kloss, tom. cit., p. 226.

Koh Samui, 40 examples.

Occurring in enormous numbers in the coconut groves of the island and causing very serious damage to the crops. Also met with, though much less numerous, in the primæval jungle in the centre of the island.

There is little doubt that this race is very markedly distinct from all the mainland races of *Sc. concolor*, occurring on the Peninsula itself and also from all the island races adjacent to our area, with the possible exception of *Sc. c. epomophorus* from Salanga (Junk Ceylon), from which race it is apparently distinguished by the more ochreous colour of the shoulder and thigh patches, which are "hazel" in the Salanga form. The degree of brilliancy of the very large series before us, all collected within a period of three weeks, varies very greatly and the most ornate approach that form of the Tenasserim *Sc. concolor caniceps* known as *Sc. concolor chrysonotus*, from which they may be differentiated by slightly smaller size and darker colour beneath.

It is possible that the whole series has been collected during a period of transition between a normal breeding pelage and one of "eclipse" though there is no direct evidence that such occurs in any member of the *Sciuridae*, found south of the Isthmus of Kra.

(For measurements see p. 136.)

10. *SCIURUS CONCOLOR FALLAX*.

Robinson and Kloss, tom. cit., p. 225.

Koh Pennan, 35 examples.

Met with under similar conditions to the preceding race.

These two forms are of course very closely related and present only average differences, which are however, quite well marked when the two series are compared as a whole.

The brightest specimen of *Sc. c. fallax* is not more brilliant than the dullest of *Sc. c. samuiensis* though the two series were collected at practically the same time of year.

The differences in colour may be correlated with a real difference between the climates of the two islands, Koh Pennan, the seaward one, being stated to have a much greater and more uniformly distributed rainfall than the landward one, Koh Pennan.

(For measurements *see below*.)

Measurements of *Sciurus* from Koh Samui and Koh Pennan:

Species.	Locality.	S. M. No.	Sex.	Head and body.	Tail.	Hind foot.	Greatest length of skull.	Condyllo-basilar length.	Zygomatic breadth.	Inter-orbital breadth.
<i>Sciurus concolor samuiensis</i>	Koh Samui Type	201/13	♂	234	242	49	56.1	48.2	32.8	19.9
"	"	202/13	♂	229	223	49.5	54.2	46.0	30.8	18.5
"	"	206/13	♂	225	214	50	55.5	47.1	32.4	19.0
"	"	208/13	♀	222	232	49	56.0	47.5	31.5	20.0
"	"	211/13	♂	222	238	51	55.0	47.5	31.7	19.9
"	"	229/13	♀	239	238	49	55.0	47.3	31.9	20.3
"	"	230/13	♂	221	223	49	54.0	46.5	32.0	18.2
"	"	241/13	♀	237	218	48.5	56.0	47.7	32.0	19.6
"	"	246/13	♂	255	197	49.5	54.4	46.4	33.4	19.7
"	"	249/13	♀	223	230	49	55.3	47.0	31.2	19.5
<i>Sciurus concolor fallax</i>	S.W. Koh Pennan Type	134/13	♂	226	237	49.5	55.5	47.9	33.2	21.2
"	S. "	136/13	♂	221	230	48	55.3	47.9	32.2	19.6
"	"	139/13	♂	225	245	49	56.8	47.4	32.9	21.3
"	"	141/13	♀	225	217	48	58.3	48.9	33.2	20.3
"	"	146/13	♂	234	243	50	56.6	48.8	33.2	20.8
"	"	147/13	♀	241	227	51.5	57.1	49.0	32.5	20.2
"	"	152/13	♀	228	236	48	58.4	49.5	33.1	20.2
"	"	154/13	♀	233	—	51.5	57.6	49.2	33.8	20.4
"	"	157/13	♀	225	234	50	57.1	49.6	31.8	19.2
"	"	162/13	♀	222	225	50	56.3	47.8	33.7	20.1
"	"	166/13	♀	204	228	50	57.0	48.2	32.1	20.0

11. EPIMYS SURIFER MANICALIS.

Robinson and Kloss, tom. cit., p. 230.

Koh Pennan, 21 examples.

On account of the broad white band or cuff which in extreme examples extends over the whole of the forearm this is externally one of the most differentiated island races of *E. surifer* in the peninsular area.

(For measurements *see* p. 138.)

12. EPIMYS SURIFER SPURCUS.

Robinson and Kloss, tom. cit., p. 230.

Koh Samui, 23 examples.

Koh Samui being nearer to the mainland than is Koh Pennan this race has had a shorter time to evolve peculiar characters than has had *E. s. manicalis*, but it has made sufficient progress in the same direction to differentiate it from the mainland animal. It is curious to find that *E. s. spurcus* bears in other respects a close resemblance *E. S. flavidulus*, a form occurring in Pulau Langkawi, an island on the other side of the Peninsula, and from this it is mainly distinguished by the different proportion of length of body and tail.

(For measurements *see* p. 138.)

13. EPIMYS JERDONI PAN.

Robinson and Kloss, tom. cit., p. 229.

Koh Samui, 5 examples.

This is a slightly differentiated form of the mainland *E. j. bukit*, and is the first representative of that animal that has been found on any of the islands in the neighbourhood of the Malay Peninsula.

(For measurements *see* p. 138.)

14. EPIMYS REMOTUS.

Robinson and Kloss, tom. cit., p. 231.

Koh Samui, 6 examples.

Koh Pennan, 3 examples.

This species was originally described from a series of six examples taken on Koh Samui but on further examination of material from the islands it appears that three individuals from Koh Pennan must be allocated to it also.

In addition to the differences already pointed out they may be distinguished from *E. rattus*, which smaller animals superficially resemble, by the much greater length of tail which broadly exceeds in every case that of head and body by 50 mm. as against about half that amount in the other, and also by difference of habit in that they are forest dwellers while *E. rattus* congregates only in the neighbourhood of houses or villages.

(For measurements *see* p. 138.)

15. EPIMYS RATTUS JALORENSIS, BONHOTE.

Fascic. Malay., Zool. I, p. 28 (1903), pl. II, figs. 1, 2.; pl. IV, figs. 4, 4a.

Koh Samui, 39 examples.

Koh Pennan, 34 examples.

The *rattus* rats of the two islands are indistinguishable and do not appear to differ appreciably from those of the mainland.

(For measurements *see below*.)

Measurements of *Epimys* from Koh Samui and Koh Pennan:

Species.	Locality.	S.M. No.	Sex.	Head and body.			length of skull.	Condyle-basilar length.	Zygomatic breadth.	Maxillary toothrow.
					Tail.	Hind foot.				
<i>Epimys surifer manicalis</i>	Koh Pennan...	291/13	♂	177	173	37	44.8	37.9	20.0	6.8
	"	292/13	♂	175	169	37	43.6	36.1	19.9	6.5
	"	294/13	♂	176	187	38.5	43.0	36.1	19.4	6.6
	"	297/13	♂	167	173	38	43.0	36.6	20.0	6.8
	"	298/13	♂	173	—	39	44.6	37.1	19.7	6.3
	"	299/13	♂	195	175	37	44.7	37.2	20.8	6.5
	"	351/13	♂	176	173	38	43.4	35.8	19.1	6.7
	"	400/13	♂	179	172	38.5	44.0	36.6	19.2	6.6
	"	402/13	♀	180	—	37	42.9	35.8	19.1	6.3
	"	403/13	♀	183	—	36	42.6	35.8	19.1	6.5
<i>Epimys surifer spurcus</i>	Koh Samui ...	286/13	♂	194	202	41	45.4	38.1	20.5	6.8
	"	287/13	♂	177	182	39	44.0	37.7	19.5	6.5
	"	288/13	♂	163	165	35.5	43.3	35.5	18.1	6.1
	"	289/13	♂	169	—	36	43.0	36.3	19.7	6.1
	"	410/13	♂	176	183	38	44.0	36.3	19.7	6.8
	"	411/13	♀	187	—	38	44.3	36.8	19.7	6.8
	"	416/13	♂	178	179	37	43.1	36.1	19.5	6.9
	"	417/13	♂	175	180	39	44.8	37.5	20.6	6.8
	"	419/13	♂	178	185	37	45.7	37.8	20.5	6.7
	"	421/13	♂	186	177	38	45.5	37.5	20.7	7.0
<i>Epimys jerdoni pan</i>	Koh Samui ...	80/13	♂	149	174	27.5	37.7	31.4	17.0	5.6
	"	81/13	♂	160	183	28	39.8	33.2	18.3	6.1
	"	82/13	♀	145	160	27.5	33.7	29.0	17.0	6.1
	"	83/13	♂	133	—	28	38.2	31.1	17.0	6.0
	"	84/13	♂	170	145	29	36.8	30.0	17.1	6.1
<i>Epimys remotus</i>	Koh Samui ...	74/13	♂	237	288	41.5	50.1	44.0	24.0	9.0
	"	75/13	♂	225	273	39	49.1	43.0	22.0	8.2
	"	76/13	♀	222	262	39	49.9	44.2	24.5	8.9
	"	77/13	♂	198	240	41	±45.0	±38.8	—	8.8
	"	78/13	♀	—	—	37	47.2	42.0	22.7	8.4
	"	79/13	♂	184	235	40.5	±44.0	±39.0	—	8.7
	Koh Pennan...	92/14	♂	198	249	38.5	45.0	39.1	21.0	8.1
	"	95/14	♂	198	237	39	44.8	39.0	21.4	8.2
	"	96/14	♀	182	231	34	44.5	38.3	21.3	8.0
	"	308/13	♀	164	187	32	41.0	35.4	20.3	6.9
<i>Epimys rattus jalorensis</i>	Koh Samui ...	379/13	♂	170	209	36	43.0	37.2	19.5	7.1

Species.	Locality.	S. M. No.	Sex.	Head and body.			length of skull.	Condylar-basilar length.	Zygomatic breadth.	Maxillary toothrow.
					Tail.	Hind foot.				
<i>Epimys rattus jalorensis</i>	Koh Samui ...	381/13	♀	174	195	34	43.9	37.6	20.4	7.6
"	"	383/13	♂	170	200	34	43.0	37.0	19.5	7.5
"	"	446/13	♀	161	178	32	41.9	35.8	20.5	7.5
"	"	456/13	♂	174	201	35	43.4	38.0	21.5	7.6
"	"	458/13	♂	189	190	33.5	44.0	37.6	21.0	7.1
"	"	465/13	♀	169	191	31.5	40.8	36.0	20.6	7.5
"	"	467/13	♂	163	176	32	42.0	36.2	20.0	7.5
"	"	502/13	♀	157	182	33	41.0	35.2	19.4	7.2
"	"	506/13	♀	172	195	32	42.5	37.0	20.0	7.3
"	"	97/14	♂	177	186	34	43.2	36.6	19.1	7.1
"	Koh Pennan...	188/13	♂	180	196	35	42.0	36.8	20.0	7.3
"	"	189/13	♂	182	184	34	43.0	36.8	20.3	7.1
"	"	194/13	♂	172	180	35	40.1	35.4	18.4	7.0
"	"	196/13	♀	168	194	33	40.8	35.7	19.0	7.0
"	"	302/13	♂	169	174	33	40.5	35.4	19.2	6.9
"	"	305/13	♂	171	171	32.5	40.0	35.5	20.0	7.4
"	"	306/13	♂	171	186	32	42.0	36.3	20.1	6.9
"	"	307/13	♂	169	189	33	42.6	36.0	20.5	7.8
"	"	314/13	♂	170	182	32.5	—	38.2	20.8	7.7
"	"	318/13	♂	192	190	34	41.8	—	20.8	7.7
"	"	319/13	♂	166	176	33.5	40.6	35.8	20.4	7.2
"	"	93/14	♂	193	209	35	44.8	38.0	21.0	7.0

III. BIRDS.

By H. C. ROBINSON, C.M.Z.S., M.B.O.U.

The main object of our visit to the group was the acquisition of large series of the local mammals and we did not therefore attempt to collect many individual specimens of birds, though an example of every species seen was, if possible, obtained.

As is the case with all the islands off the east coast of the Malay Peninsula the ornithology presents few features of interest and after allowing for varying circumstances, such as the degree of deforestation, and the existence or otherwise of paddy land, is identical in all the islands. In all, certain birds such as *Cittocinclu macrura*, *Eulabes* sp. and *Calornis chalybea* are very common while certain groups such as the Woodpeckers, Barbets, Trogons and Timeliids are either rare or entirely absent. The present islands differ from Pulau Tioman and Tinggi further south in possessing two species of game bird, *Turnix taigoo* and *Gallus gallus*; but the latter, of which we did not obtain specimens, has possibly merely been introduced by the Siamese population the local domestic breed being extraordinarily close to the wild bird. Hornbills, *Dicoceros bicornis*, also were common on the hills, but these as well as *Alcedo meninting* and *Accipiter gularis* were only noted though they were seen more than once. The

common fishing owl *Ketupa javanensis* was seen on the rice-fields and the note of a *Scops*, probably *Sc. lempiji*, heard in the jungle on the hills. As on every other island on these coasts, birds, in the old jungle, were extraordinarily scarce both in species and in individuals, the only ones at all common being, *Cittocinclla macrura*, *Eudynamis honorata*, *Micropus melanocephalus* and *Cyornis sumatrensis*. In the secondary jungle *Pellorneum subochraceum* and *Turdinus olivaceus* were not infrequent, while, in the open country and among the coconut groves, *Pycnonotus finlaysoni*, *Calornis chalybea*, *Eulabes intermedia* and the two bee-eaters were the dominant forms. All the sunbirds (with the exception of *N. malaccensis*) the flower pecker, *Dicaeum cruentatum* and *Mixornis gularis* were confined to a narrow littoral belt. The rice-field birds were those common in similar situations all over the Malay Peninsula.

The Black and White Imperial Pigeon (*Myristicivora bicolor*) which swarms on the southern islands at about the same time of year was not met with, though it possibly occurs, while the existence of the Finfoot *Heliornis personata* on Koh Pennan is a very surprising fact. The cormorant, which was common, is hardly known further south.

Two species not hitherto met with within the limits of the Malay Peninsula—viz., *Collocalia merguensis* and *Acrocephalus bistrigiceps* were secured, the former being extraordinarily abundant, breeding in great numbers on caves and hollows in the chain of small rocky islands between the larger islands and the mainland.

TURNICIDÆ.

1. TURNIX TAIGOOR.

Turnix taigoor (Sykes); Ogilvie Grant, Cat. Birds Brit. Mus., xxii, p. 530 (1894).

Fairly common on both islands among the *lalang*.

PHASANIDÆ.

GALLUS GALLUS.

antea, p. 87.

Jungle cock were heard on the west side of Koh Samui but none were obtained.

TRERONIDÆ.

2. TRERON NIPALENSIS.

Treron nipalensis (Hodgs.); Salvadori, Cat. Birds Brit. Mus., xxi, p. 34; Robinson and Kloss, Ibis., 1910, p. 674.

The Thick-billed Pigeon was very common on Koh Samui.

3. OSMOTRERON VERNANS.

antea, p. 88.

Fairly common on both islands but not nearly so numerous as on the Tioman group, further south.

A hard set egg was secured on Koh Pennan on May 27th. The nest consisted of a few loosely woven twigs placed in a small bush about five feet off the ground.

CARPOPHAGA JENEA.

Carpophaga jenea (Linn.); Salvad., tom. cit., p. 190.

The Bronze Imperial Pigeon was numerous on both islands; specimens were shot but not preserved.

COLUMBIDÆ.

4. TURTUR TIGRINUS.

antea, p. 88.

Exceedingly abundant on both islands. We preserved a male from Koh Pennan.

5. CHALCOPHAPS INDICA.

antea, p. 88.

Fairly common in the jungle on both islands. We obtained two males on Koh Samui.

RALLIDÆ.

6. LIMNOBÆNUS FUSCUS.

Limnobænus fuscus (Linn.); Sharpe, Cat. Birds Brit. Mus., xxiii, p. 146 (1894).

One male from Koh Samui.

"Iris and orbits red, bill bluish green, legs pale coral, claws black."

7. AMAURORNIS PHÆNICURA CHINENSIS (BODD).

Amaurornis phænicura chinensis (Bodd.). Stresemann Nov. Zool., vol. xx, p. 304 (1913).

Amaurornis phænicura (Forst.); Sharpe, tom. cit., p. 156; Robinson and Kloss, Ibis., 1911, p. 11.

Fairly common on Koh Samui; not noted on Koh Pennan.

"Iris chocolate, bill greenish yellow, orange on culmen, feet wax yellow"; wing 156, 154.

These specimens confirm Stresemann's diagnosis having the upper surface olive (less grey) and the rump strongly washed with bronze.

HELIORNITHIDÆ.

8. HELIOPHAPS PERSONATA.

Heliopaps personata (G.R.Gr.): Sharpe, tom. cit., p. 232; Bonhote, P.Z.S. 1901 (i), p. 79.

The Masked Finfoot is widely distributed throughout the Malay Peninsula in very varied situations from sluggish mangrove creeks to rapid mountain streams but is nowhere common. One of our Dyaks obtained a fine male specimen in full plumage on a small stream on Koh Pennan.

"Iris dark hazel, feet apple green with a tinge of blue, edges of lobes and soles yellowish, lobes black beneath. Bill chrome yellow, yellowish green on culmen, basal culminal process chrome yellow."

LARIDÆ.

9. STERNA DOUGALLI.

Sterna dougalli, Mont.; Howard Saunders, Cat. Birds Brit. Mus., xxv, p. 70 (1896); Robinson, Journ. Fed. Malay States Mus., ii, p. 9 (1906).

Terns were very common in the Strait between Koh Samui and Koh Pennan but generally kept far out to sea among the reefs. On a small island off Koh Pennan we obtained two beautiful specimens in full breeding plumage with the roseate tint of the under surface strongly developed and the streamers of the tail elongated. They were feeding amongst large numbers of the succeeding species. The only other specimens obtained within the limits of the Malay Peninsula are three shot in August on Pulau Jemor, a small island in the middle of the Straits of Malacca off the Selangor Coast.

10. STERNA MELANAUCHEN.

Sterna melanauchen, Temm.; Howard Saunders, tom. cit., p. 126; Robinson, Journ. Fed. Malay States Mus, v, p. 18 (1913).

Koh Pennan. In full breeding plumage at the end of May.

Very common along the whole of the east coast of the Malay Peninsula.

CHARADRIIDÆ.

11. SARCOGRAMMUS ATRINUCHALIS.

antea, p. 88.

Common on both islands on the rice-fields and open spaces.

"Iris brown, eye lappet and terminal half of bill carmine, lip of bill black, tarsi pale whitish yellow, feet greenish yellow."

12. OCHTHODROMUS PYRRHOTHORAX.

Ochthodromus pyrrhothorax (Gould); Sharpe, tom. cit., p. 226; Robinson and Kloss, tom. cit., p. 12.

A male shot on Koh Pennan on June 1st, shows no signs of assuming breeding plumage.

13. ÆGIALITIS ALEXANDRINA.

Aegialitis alexandrina (Linn.); Sharpe, tom. cit., p. 275.

Very common on the sandy beaches of both islands and evidently about to breed though we did not obtain eggs or young.

14. DISSURA EPISCOPUS.

antea, p. 88.

Very common on Koh Samui.

"Male, iris, inner ring red, outer yellow, legs dirty claret red, bill base black, remainder maroon red, orbital skin black, rest of bare skin on head slatey, skin under wings scarlet orange."

ARDEIDÆ.

15. ARDEA SUMATRANA.

Ardea sumatrana (Raffles); Sharpe, Cat. Birds Brit. Mus., xxvi, p. 68 (1898); Robinson and Kloss, tom. cit., p. 14.

An adult female from Koh Pennan.

"Iris bright yellow, orbital skin greenish chrome, legs brownish, joints tinged with green, soles whitish yellow, bill black, lower mandible yellow at tip shading into white, chrome at base."

16. DEMIEGRETTE SACRA.

Demiegretta sacra (Gm.); Sharpe, tom. cit., p. 137; Robinson and Kloss, tom. cit., p. 15.

One from Koh Samui and another from Koh Pennan. The latter is in the grey phase and the former in the white, with a few dark feathers on the back and mantle and the tips of the greater wing coverts grey.

"Iris pale chrome, orbital skin greenish, tarsi and feet yellowish green, the soles orange, upper mandible greenish, the lower yellow."

17. ARDEOLA BACCHUS.

Ardeola bacchus (Bp.); Sharpe, tom. cit., p. 211; Robinson and Kloss, tom. cit., p. 15.

A female from Koh Samui is moulting into the breeding plumage and the new feathers on the crown and neck are bright chestnut. The dimensions however are small the wing being only 8.1 and the tarsus. 2.2. which agree with those of *A. grayi*. which also occur in the Peninsula.

"Iris lemon yellow, bill and orbital skin greenish yellow, tip of bill black, tarsi greenish yellow, feet deeper yellow."

18. ARDETTA SINENSIS.

Ardetta sinensis (Gm.); Sharpe, tom. cit., p. 227.

An adult male from Koh Pennan.

"Iris bright yellow, orbital skin and lores greenish yellow, bill yellowish white, the culmen brownish horn, tarsi and toes, chrome, with a slight greenish cast."

ANATIDÆ.

19. DENDROCYCNA JAVANICA.

antea, p. 89.

There were a few Whistling Teal on the rice-fields at Koh Samui.

"Male, iris hazel, orbital skin yellowish green, bill and feet dark slatey."

PHALACROCORACIDÆ.

20. PHALACROCORAX CARBO.

Phalacrocorax carbo (Linn.); Ogilvie Grant, Cat. Birds Brit. Mus., xxvi, p. 340 (1898).

A male in non-breeding plumage was obtained at Koh Pennan.

"Iris emerald, gular skin chrome, feet black, bill blackish, the culmen yellowish."

Though very rare in the south of the Peninsula Cormorants become much more abundant in the north; I have obtained it on the coast of Patani and we saw four specimens in Senggora Roads on our way

to Koh Samui. Tropical specimens are said to be smaller than those from northern seas. The one before us has the wing about 13.5 and the culmen 2.6 inches.

FALCONIDÆ.

21. SPIZÆTUS LIMNAETUS.

Spizaetus limnaetus (Horsf.); Sharpe, Cat. Birds Brit. Mus., i, p. 272 (1874); Robinson and Kloss, tom. cit., p. 23.

Two females from Koh Pennan, one in the ordinary and the other in the melanotic phase.

22. SPILORNIS PALLIDUS.

antea, p. 90.

Rather more richly coloured than the specimen from the mainland.

"Female, iris bright yellow, bill and feet greenish lead, cere yellowish."

23. HALIASTUR INTERMEDIUS.

Haliastur intermedius Gurney; Sharpe, tom. cit., p. 314; Robinson and Kloss, tom. cit., p. 24.

The local form of the Braminy Kite is common everywhere along the sea coast and for some distance inland in open country.

24. HALIAETUS LEUCOGASTER.

Haliaetus leucogaster (Gm.); Sharpe, tom. cit., p. 307; Robinson and Kloss, tom. cit., 0.23.

Two adults and an immature bird were obtained on Koh Samui and Koh Pennan on both of which islands it was very common.

The immature specimen is in a somewhat peculiar stage of plumage resembling birds from Langkawi which we have, as I am now inclined to think incorrectly, referred to *H. leucocoryphus* (Robinson and Kloss, tom. cit., p. 24).

PANDIONIDÆ.

25. POLIOÆTUS ICHTHYAETUS.

Polioætus ichthyaetus (Horsf.); Sharpe, tom. cit., p. 452; Robinson and Kloss, tom. cit., p. 30.

An adult male from Koh Pennan.

CORACIDÆ.

26. EURYSTOMUS ORIENTALIS.

Eurystomus orientalis (Linn.); Sharpe, Cat. Birds Brit. Mus., xvii, p. 33, pl. ii, fig. i (1892); Robinson and Kloss, Ibis, 1911, p. 32. Stresemann, Nov. Zool., xx, pp. 298-301 (1913).

A male and two females from Koh Samui and Koh Pennan belonging to the black-tailed form and therefore nearer to the true *E. orientalis* than to its subspecies. *E. orientalis calonyx* (e. f. Stresemann, loc. cit. supra).

"Male, bill and feet coral, tip of bill and claws brownish black, orbital skin brownish red, iris dark hazel."

UPUPIDÆ.

27. UPUPA INDICA.

Upupa indica. Reichenb. : Salvin, Cat. Birds Brit. Mus., xvi, p. 10 (1892) ; Robinson and Kloss, tom. cit., p. 35.

Very common on Koh Samui but at the time of our visit in shockingly ragged and disreputable plumage.

"Male, iris hazel, bill black, pinkish at base, feet greyish, soles pinkish."

ALCEDINIDÆ.

28. PELARGOPSIS MALACCENSIS.

Pelargopsis malaccensis, Sharpe, Cat. Birds Brit. Mus., xvii, p. 103 (1892).

Rhamphalcyon capensis malaccensis, Oberholser, Proc. U. S. Nat. Mus., xxxv, p. 678 (1909).

Judging from Oberholser's (*loc. cit.*) monograph of the genus a male and two females from Koh Pennan would appear to belong to this race and not as might be expected to the more northern form *P. burmanica*, Sharpe.

All have a distinct brown pileum, though in one female, owing to abrasion of the feathers it is very much lighter than the others. The wing of the male measures 146 mm. and of the two females 146 and 145. The specimens are exactly matched by others from more southern localities.

"Female, iris dark hazel, bill dark coral red, more vermilion towards gape, dark maroon at tip, tarsi and feet vermilion, claws brownish horn."

29. HALCYON SMYRNENSIS.

antea, p. 92.

Common on both islands.

30. HALCYON ARMSTRONGI.

Halcyon armstrongi, Sharpe, tom. cit., p. 277, pl. vii, fig. 1 ; Robinson and Kloss, tom. cit., p. 34.

Halcyon humii, Sharpe, tom. cit. p. 281, pl., viii.

After again examining over fifty specimens of this Blue and White Kingfisher from all parts of the Malay Peninsula, including eleven from Koh Samui and Koh Pennan I am convinced that it is impossible to maintain the distinctness of the northern form from the southern bird. The characters relied on by Dr. Sharpe are met with indifferently in specimens from the same locality and I do not think that the explanation put forward—viz., that in the south of the Peninsula the duller greener bird (*H. armstrongi*) is migratory, while the brighter form (*H. humii*) is resident can be supported by facts.

"Female, iris dark hazel, bill black, base of lower mandible pinkish, feet greyish brown."

MEROPIDÆ.

31. MEROPS SUMATRANUS.

antea, p. 92.

32. MEROPS PHILIPPINUS.

antea, p. 92.

Both Bee-eaters were common on Koh Samui, less so on Koh Pennan.

CYPSELIDÆ.

33. TACHORNIS INFUMATA.

Tachornis infumata (Sclat.); Hartert, Cat. Birds Brit. Mus., xvi, p. 467 (1892); Robinson and Kloss, tom. cit., p. 38.

This little palm swift was very abundant after rain on both islands, but only one female was shot.

34. CYPSELUS PACIFICUS.

Micropus pacificus (Lath.); Hartert, tom. cit., p. 448.

Three from Koh Pennan.

35. COLLOCALIA MERGUIENSIS.

Collocalia francica, subsp. *merguiensis*, Hartert, tom. cit., p. 453.

Very common indeed on both islands breeding on some of the small islands between Koh Samui and the mainland, the nests being regularly collected by the Chinese. This race has not hitherto been recorded from the Malay Peninsula, the form occurring on the islands to the south being *C. f. inexpectata*, Hume.

CUCULIDÆ.

36. CACOMANTIS MERULINUS.

Cacomantis merulinus (Scop.); Shelley, tom. cit., p. 40; Robinson and Kloss, tom. cit. p. 40.

A single very immature specimen of undetermined sex from Koh Samui.

37. EUDYNAMIS ORIENTALIS.

Eudynamis orientalis (Linn.); Shelley, Cat. Birds Brit. Mus., xix, p. 322 (1891); Robinson and Kloss, tom. cit., p. 41.

Very common on both islands as on practically every other island of any size in the vicinity of the Malay Peninsula, though commoner in the winter months.

"Male, iris crimson, bill greenish slate, feet slaty, edges of scales yellowish."

38. CENTROPUS SINENSIS INTERMEDIUS.

antea, p. 93.

Five specimens from the islands agree with those from the mainland in the characters noted. The shortness and breadth of the tail is especially noticeable.

39. RHOPODYTES TRISTIS.

antea, p. 93.

Very common in secondary jungle on Koh Samui.

PICIDÆ.

40. CHRYSOCOLAPTES GUTTICRISTATUS.

Chrysocolaptes gutticristatus (Tick.); Hargitt, tom. cit., p. 448; Robinson and Kloss.

A male from Koh Samui. Fairly common in the interior of the islands especially on the *pinang* palms (*Areca catechu*).

41. IYNGIPICUS CANICAPILLUS.

Iyngipicus canicapillus (Blyth); Hargitt, Cat. Birds Brit. Mus., xviii, p. 322 (1890); Robinson and Kloss, tom. cit., p. 46; Robinson, Journ. Fed. Malay States Mus., v, p. 20 (1913).

Iyngipicus pumilus, Hargitt, tom. cit., p. 321.

Of two males obtained on Koh Samui in May, one has the central rectrices entirely uniform, while the other has them spotted on both webs. The wing of both specimens is about 3.2 in. (80 mm.). I think therefore that *I. pumilus* whose range is overlapped both north and south by *I. canicapillus* has no claim even to sub-specific distinction.

PITTIDÆ.

42. PITTA CYANOPTERA.

antea, p. 97.

One female from Koh Samui.

"Iris dark hazel, bill black, feet flesh."

MUSCICAPIDÆ.

43. CYORNIS SUMATRENSIS.

Siphia sumatrensis, Sharpe, tom. cit., p. 451.

Cyornis sumatrensis, Hartert, Nov. Zool., ix, p. 550 (1902); Robinson and Kloss, tom. cit., p. 51.

After a good deal of hesitation I have referred a large number of specimens obtained in both islands to this race, which does not seem very markedly differentiated from *C. tickellii* of Peninsular India and Burma, from which it is distinguished only by its slightly smaller size, and whiter abdomen, sharply defined from the rufous orange of the breast.

"Female, iris dark hazel, bill black, feet bluish flesh."

Mr. Seimund obtained a nest on Koh Pennan on May 25th and shot the parent bird. The nest was placed in a crevice in a rock about six feet off the ground and is of the usual flycatcher type, a hemispherical cup about four inches in external and two in internal diameter, made of dead leaves and fragments of fern and lined with tendrils. The eggs were three in number and hard set. In shape they are blunt ovals and the shell is almost without gloss. The ground colour is olive grey clouded with mottlings of reddish brown which in two eggs is fairly evenly distributed over the shell and in third forms a zone at the larger end. The measurements are A 172 × 13.6; B 178 × 13.3; C 178 × 13.5 mm.

44. HYPOTHYMIS AZUREA.

antea, p. 99.

A male from each island; not common.

"Iris carmine, bill and feet slatey black."

45. MUSCITREA GRISOLA.

Pachycephala grisola (Blyth.) Gadow, Cat. Birds Brit. Mus., viii, p. 220.

Hyloterpe grisola (Blyth); Sharpe, Hand-list Birds, iv, p. 312 (1903).

Muscitrea cinerea, Blyth, Journ. Asiat. Soc. Bengal, xvi, p. 122 (1847); Sharpe, Hand-list Birds, iii, p. 220 (1901).

Muscitrea grisola, Oates, Faun. Brit. Ind. Birds, ii, p. 30 (1890); Robinson and Kloss, tom. cit., p. 54.

This species was fairly common in a small patch of mangrove on the west side of Koh Samui and five specimens, one with the secondaries and inner primaries, earthy brown on the outer webs, were secured. The species is numerous along the coastal zone on both sides of the Malay Peninsula and on several of the islands, but is not met with inland. It appears to keep strictly to the mangroves.

46. TERPSIPHONE AFFINIS.

antea, p. 99.

Two males from Koh Samui.

"Iris emerald, feet lead grey, bill and eye wattle smalt blue, inside of mouth sage green."

CAMPOPHAGIDÆ.

47. CAMPOPHAGA NEGLECTA.

antea, p. 101.

A pair from Koh Samui.

"Iris dark hazel, bill and feet blackish.

PYCNONOTIDÆ.

48. ÆGITHINA TIPHIA.

antea, p. 101.

The Common Iora was fairly numerous on both islands.

49. IRENA PUELLA.

antea, p. 102.

Common on the hills of Koh Samui in the patches of old jungle.

50. MICROPUS MELANOCEPHALUS.

Microtarsus melanocephalus (Gm.); Sharpe, tom. cit., p. 65.

Micropus melanocephalus, Robinson and Kloss, tom. cit., p. 57.

One of the few birds that was at all numerous in the patches of heavy jungle on the hills of Koh Samui.

51. PYCNONOTUS ANALIS.

Pycnonotus analis (Horsf.); Sharpe, tom. cit., p. 140; Robinson and Kloss, tom. cit., p. 57.

By no means common. One male was obtained on Koh Samui.

"Iris hazel, bill slaty black, feet greenish black."

52. PYCNONOTUS FINLAYSONI.

Pycnonotus finlaysoni (Strickl.); Sharpe, tom. cit., p. 144; Robinson and Kloss, tom. cit., p. 58.

Fairly common both on Koh Samui and Koh Pennan.

53. PELLORNEUM SUBOCHRACEUM.

antea, p. 103.

One of the commonest birds on Koh Samui; not shot on Koh Pennan, though it doubtless occurs there.

"Male, iris chestnut, bill horn, feet flesh."

54. TURDINUS OLIVACEUS.

antea, p. 103.

One of the few Babblers found on the coastal islands; fairly numerous on Koh Samui.

"Female, iris red-brown, bill greenish lead, feet brownish flesh."

55. MIXORNIS GULARIS, > RUBRICAPILLUS.

antea, p. 106.

Five specimens from Koh Samui and Koh Pennan agree with those from the Bandon mainland in not being typical *M. gularis* but intermediate between that form and *M. rubricapilla*. Two of these specimens are however nearer to the latter race having the streaks on the throat confined to the shafts of the feathers, the crown rusty ferruginous, not chestnut, the outer aspect of the wings olivaceous and the yellow supercilium very distinct. (c.f. *Hume, Stray. Feath.* vi, p. 266, 267 (1878). As in so many other cases we are at the meeting place of two local races and the individual characters have become very plastic.

The two specimens above noted have the soft parts recorded as follows: "Male, iris light hazel, bill lead, yellowish at edges, tarsi and feet greenish lead, yellowish on soles. Female, iris wax yellow, bill dark horn above, yellowish green below, the tomlia and edges yellow, skin at gape, wax yellow, feet greenish yellow, more yellow on soles."

TURDIDÆ.

56. LARVIVORA CYANEA.

Erithacus cyaneus (Pall.) Seebohm, Cat. Birds Brit. Mus., v, p. 303; Robinson and Kloss, tom. cit., p. 64.

A nearly adult male was procured in dense jungle on the hills of Koh Samui on May 16th, showing that the species is probably resident.

"Bill black, livid flesh at base, feet pale flesh."

57. COPSYPCHUS MUSICUS.

Copsychus musicus (Raffles); Robinson and Kloss, tom. cit. p. 65.

Copsychus saularis (partim); Sharpe, tom. cit., p. 61.

Not so numerous as further south.

58. CITTOCINCLA MACRURA.

antea, p. 108.

One of the commonest birds, especially in the jungle among rocks.

"Male, iris chestnut, feet pale flesh, bill black."

SYLVIIDÆ.

59. ORTHOTOMUS ATRIGULARIS.

antea, p. 108.

Common on both islands.

60. ACROCEPHALUS BISTRIGICEPS.

Acrocephalus bistrigiceps, Swinh.; Seebohm, tom. cit., p. 51.

Two female specimens were shot on Koh Pennan among high grass by one of the Dyaks on May 29th and 30th.

The species is new to the Malay Peninsula and the present locality is a considerable extension of its range, which has not hitherto been known to extend south of Tavoy in Central Tenasserim.

61. PHYLLOSCOPUS BOREALIS.

Phylloscopus borealis (Blas.); Seebohm, Cat. Birds Brit. Mus., v, p. 40 (1881); Robinson and Kloss, tom. cit., p. 65.

A female from the hills of Koh Samui dated May 15th, and a male from Koh Pennan, shot on May 30th. In both these specimens the pale wing bars formed by the light tips to the coverts are almost entirely lacking.

CORVIDÆ.

62. CORVUS MACRORHYNCHUS.

Corone macrorhynchus (Wagl.); Sharpe, Cat. Birds Brit. Mus., iii, p. 38 (1877).

Corvus macrorhynchus, Robinson and Kloss, tom. cit., p. 71.

The jungle crow was very common both on the islands and on the mainland; one was shot on Koh Samui to make certain of the identification.

DICRURIDÆ.

63. DISSEMURUS PARADISEUS.

antea, p. 109.

Common on the islands.

STURNIDÆ.

64. EULABES INTERMEDIUS.

Mainatus intermedius (A. Hay); Sharpe, Cat. Birds Brit. Mus., xiii, p. 66; Robinson and Kloss, tom. cit., p. 67.

Gracula javana intermedia, Stresemann, Nov. Zool., xix, p. 314 (1912).

This Mynah was very common on both Koh Samui and Koh Pennan and we obtain five specimens. All are to be referred to the

present race, which is only a subspecies of *E. javanensis*. The shape of the postocular patch of feathers varies and is in some specimens practically united to the feathers of the throat. Better characters for the discrimination of the race from the typical form are the smaller size and the more slender bill, the latter feature being especially well marked. The wings of four specimens range from 176-168 mm. while that of a skin from Trang is 162. A male *E. javanensis*, from Pulau Aor measures 186 mm.

"Male, iris dark hazel, bill orange-yellow at tip, feet and lappets cadmium yellow, the latter apple green beneath eye."

65. *COLORNIS CHALYBEA*.

Calornis chalybea (Horsf.); Sharpe, tom. cit., p. 143; Robinson and Kloss, tom. cit., p. 68.

Common everywhere.

66. *ANTHUS MALAYENSIS*.

Anthus malayensis, Eyton, P.Z.S. 1839, p. 104; Robinson and Kloss, tom. cit., p. 74.

Anthus rufulus (partim) Sharpe, Cat. Birds Brit. Mus., p. 574 (1885).

Common on the rice-fields of both islands. The specimens obtained are in extremely worn plumage but are almost certainly this form.

"Male, iris dark hazel, bill yellowish horn, feet pinkish flesh."

PLOCEIDÆ.

67. *MUNIA ACUTICAUDA*.

Uroloncha acuticauda (Hodgs.); Sharpe, Cat. Birds Brit. Mus., xiii, p. 356 (1885).

Very common amongst the lalang and on the rice-stubbles of both islands and also on the mainland.

"Male, iris chestnut, bill lead, lower mandible paler, feet lead black."

NECTARINIIDÆ.

68. *ÆTHOPYGA CARA*.

Aethopyga cara, Hume, *Stray Feath.*, ii, p. 473 (note) (1874).

Aethopyga siparaja (Raffles) (*partim*); Robinson and Kloss, tom. cit., p. 74.

This form which extends up the Burmese Coast to Pegu is only a race of the Malayan *Ae. siparaja* which occurs in the southern half of the Peninsula, Borneo, Java and Sumatra. The differences between the two forms are slight but the northern form (*Ae. cara*) always has the upper tail coverts greenish not violet, the yellow rump patch more lemon (less orange) the yellow bases to the scarlet feathers of the throat and breast less pronounced and the crown metallic greenish not violet. As Hume points out true *Ae. siparaja* has the

violet moustachial streak bordered below with black which is not the case with *Ae. cara*. The receipt of additional specimens enables me to state that the bird met with in Penang is *Ae. siparaja*, while that from Langkawi, Trang and Koh Samui is *Ae. cara*, the birds found in the Butang Archipelago are in intermediate.

Two male specimens were obtained on Koh Samui, where it was not very abundant.

"Iris dark hazel, bill black, lower mandible brownish, feet brownish black, soles whitish."

69. CYRTOSTOMUS FLAMMAXILLARIS.

Cinnyris flammaxillaris (Blyth); Gadow, tom. cit., p. 77.

Cyrtostomus flammaxillaris, Robinson and Kloss, tom. cit., p. 77.

Common among flowering shrubs on the shores of both islands.

"Male, iris hazel, bill and feet blackish, soles greenish yellow."

70. LEPTOCOMA HASSELTII.

Cinnyris hasselti (Temm.); Gadow, tom. cit., p. 67; Robinson and Kloss, tom. cit., p. 77.

One male from Koh Pennan.

71. ANTHOTHREPES MALACCENSIS.

Anthothreptes malaccensis (Scop.); Gadow, Cat. Birds Brit. Mus., ix, p. 122 (1884); Robinson and Kloss, tom. cit., p. 76.

Everywhere, where there were coconut trees.

DICÆIDÆ.

72. DICÆUM CRUENTATUM.

Dicæum cruentatum (Linn.); Sharpe, Cat. Birds Brit. Mus., x, p. 15 (1885); Robinson and Kloss, tom. cit., p. 78.

Common on the coast of both islands.

REPTILES AND BATRACHIANS FROM BANDON,
KOH SAMUI AND KOH PENNAN.

BY H. C. ROBINSON, C.M.Z.S., AND C. BODEN KLOSS, F.Z.S.

The small collection of Reptiles and Batrachians obtained in the Siamese Province of Bandon on the east side of the Malay Peninsula near its northern extremity and on the adjacent islands of Samui and Pennan includes, as was to be expected, a relatively large number of Tenasserim and Siamese forms. No new records for the Malay Peninsula were obtained though the places visited were quite unknown: but the collections, especially those from the islands, are of interest from the point of view of distribution. As Mr. Boulenger's recent volume summarizes all our knowledge of the reptiles, etc., of the Malay Peninsula it has been unnecessary to cite other references.

1. *Trionyx hurum*, Gray.

Boulenger, Vertebrate Fauna of the Malay Peninsula: Reptilia and Amphibia, p. 9 (1912).

A fresh-water turtle obtained at Kao Nawng, Bandon, is represented by the head only. Cranial characters however appear to indicate that it is a member of the above species which has only rarely been recorded from the Malay Peninsula.

2. *Cyclemys annandalei*, Boulenger.

Boulenger, op. cit., p. 19.

A young individual from Koh Pennan. Carapace 72 by 65 m.m.

3. *Cyclemys dhor* (Gray).

Boulenger, op. cit., p. 20.

A young individual was obtained at Ban Kok Klap, Bandon. Carapace 84 by 75 mm.

4. *Hemidactylus frenatus*, Dum. and Bibr.

Boulenger, op. cit., p. 41.

Three examples were collected on Koh Samui.

5. *Mimetozone craspedotus* (Mocquard).

Boulenger, op. cit., p. 46.

This extremely rare reptile only known from Kina Balu, Borneo and Penang, appears to be fairly numerous on Koh Samui where nine specimens were obtained. It was found both in houses and on the stems of coconut palms and is diurnal in its habits.

6. *Gecko verticillatus*, Laur.

Boulenger, op. cit., p. 50.

Koh Samui, 2 examples.

Koh Pennan, 2 examples.

Common and apparently occasionally gregarious ! No less than nine were seen together on one tree.

7. *Draco maculatus* (Gray).

Boulenger, op. cit., p. 58.

Nine examples from Koh Samui

8. *Draco cyanolæmus* Bouleng.

Boulenger, op. cit., p. 60.

Two specimens of this rare flying-lizard, recorded hitherto only from the mountains of the Federated Malay States, were obtained at Kao Nawng, Bandon. It has also been obtained in some numbers on the Adang Islands, north of Penang.

9. *Draco blanfordi*, Bouleng.

Boulenger, op. cit., p. 61.

Two individuals were collected at Kao Nawng, Bandon.

10. *Draco microlepis*, Bouleng.

Boulenger, op. cit., p. 62.

A single example was captured on Koh Pennan: it is also known locally from the mountains of Perak.

11. *Draco melanopogon*, Bouleng.

Boulenger, op. cit., p. 62.

One specimen was met with at Kao Nawng, Bandon.

12. *Gonycephalus borneensis* (Schleg.).

Boulenger, op. cit., p. 65.

Two examples of this fairly common lizard were obtained at Kao Nawng.

13. *Acanthosaura armata* (Gray).

Boulenger, op. cit., p. 68.

One specimen from Kao Nawng.

14. *Calotes versicolor* (Daud.).

Boulenger, op. cit., p. 71.

Six examples from Koh Samui and four from Koh Pennan.

15. *Calotes emma*, Gray.

Boulenger, op. cit., p. 72.

Two specimens were obtained on Koh Samui and three from Koh Pennan.

16. *Mabuia multifasciata* (Kuhl).

Boulenger, op. cit., p. 84.

Examples of the common scink were preserved from both Koh Samui and Koh Pennan.

17. *Lygosoma olivaceum*, Gray.
Boulenger, op. cit., p. 91.
Three specimens from Koh Samui.
 18. *Simotes cyclurus* (Cantor).
Boulenger, op. cit., p. 149.
A single specimen from Koh Samui.
 19. *Hypsirhina plumbea* (Boie).
Boulenger, op. cit., p. 160.
One example from Koh Samui.
 20. *Psammodynastes pulverulentus* (Boie).
Boulenger, op. cit., p. 173.
An immature individual was obtained at Kao Nawng, Bandon.
 21. *Rana tigrina*, Daud.
Boulenger, op. cit., p. 234.
One specimen from Koh Pennan.
 22. *Rhacophorus lencomystax* (Gravenh.).
Boulenger, op. cit., p. 248.
Three examples from Koh Pennan.
 23. *Microhyla achatina* (Boie).
Boulenger, op. cit., p. 261.
One specimen of this little frog from Koh Pennan.
 24. *Callula pulchra*, Gray.
Boulenger, op. cit., p. 264.
One example from Koh Pennan.
 25. *Bufo melanostictus*, Schneid.
Boulenger, op. cit., p. 272.
Two specimens from Koh Pennan.
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TWO NEW ORCHIDS FROM THE PROVINCE OF BANDON, S.W. SIAM.

BY H. N. RIDLEY, C.M.G., M.A., F.R.S., LATE DIRECTOR OF GARDENS,
STRAITS SETTLEMENTS.

[The two new species described below were obtained on the mountain Kao Nawng in the province of Bandon, which is referred to *antea* p. 84. Owing to the unfavourable weather and the press of other work, botanical collecting was not attempted on this mountain but in addition to the two novelties the following species were also obtained.—H.C.R.]

OLEACEÆ.

1. JASMINUM LONGIFOLIUM. KING.

Kao Nawng, 3,500 feet. *Distrib.*—Malay Peninsula.

GESNERACEÆ.

2. DIDYMOCARPUS FLAVA. RIDLEY.

Kao Nawng, Bandon, 1,500 feet. No. 5783. *Distrib.*—Malay Peninsula.

ORCHIDEÆ.

3. DENDROBIUM PARVIFLORUM. ROBB. FIL.

Kao Nawang, Bandon, 1,500 feet. *Distrib.*—Burma.

Flowers white, with a faint yellow spot on lip. On trees.

Probably also *D. curviflorum*, Rolfe, but not Hooker's *D. kentrochilum* which Kranzlin refers to this species, the flowers of the latter being twice as large.

4. BULBOPHYLLUM LOBBII. LINDLEY.

Kao Nawang, Bandon, 1,500 feet. Exceedingly common in large masses round our camp at this elevation.

Not the variety or species *Siamense* but the true Javanese form.
Distrib.—

5. COELOGYNE TRICARINATA. *sp. nov.*

Rhizome woody branching, covered with stiff sheaths ovate polished, 4 mm. in diameter. Pseudobulbs elongate conic, 4 angled 7 cm. Leaves thinly coriaceous lanceolate acuminate acute narrowed to the base 20-21 cm. long, 3.5 cm. wide, midrib prominent and 4 nerves conspicuous, petiole distinct 4 mm. long. Scape from the top of the pseudobulb slender, basal portion 15 cm. nude. Bracteate portion 4 cm. long, bracts distichous lanceolate obtuse to subacute. Raceme slender flexuous 12-17 cm. long, internodes 2 cm. long. Predicels 7 mm. long. Sepals lanceolate acute 12 mm. long. Petals very narrow linear. Lip distinctly 3-lobed, 11 mm. long, side lobes large rounded at tip, midlobe much larger 6 mm. long, 5 mm. wide,

obovate broadly rounded at the tip, keels three, the two outer ones from the base to the midlobe, the median short in the middle, all strongly undulate, base of lip saccate. Column slender straight 5 mm. long. Clinandrium large margin wide toothed; stelidia very distinct erect obtuse. Stigma large.

Kao Nawng, Bandon, 4,000 feet.

This differs from *C. elata*, Lindl., in its smaller flowers and distinctly 3-lobed lip, with 3 keels not 2 only.

6. *CHRYSOGLOSSUM ROBINSONII*. *sp. nov.*

Stem creeping, 16 cm. or more long, pseudobulbs slender conic-cylindric 1.5 cm. long erect purplish, 8 mm. apart. Leaf ovate acuminate herbaceous narrowed at the base to the petiole 10 cm. long, 3 cm. wide, petiole 6 mm. long. Scape 14 cm. tall slender with several papery sheaths at the base and one longer one in the middle. Flowers 4, bracts lanceolate long acuminate 1.1 cm. long 2 mm. wide at base (upper ones smaller). Pedicel slender 1.4 cm. long, 2 mm. wide at the base, laterals falcate with a short mentum, petals shorter similar in form, lip base narrow channelled, rather thick, limb 3-lobed, side lobes broad obovate rounded, mid-lobe triangular obovate emarginate, keels 2 semioval between the lobes, passing into elevated veins on the mid-lobe, with a median elevated vein with 2 short erect oblong processes at the base of the keels, whole lip 1 cm. long 9 mm. across at the widest part of the mid-lobe. Column slender curved 6 mm. long, side lobes triangular acute. Anther cap-shaped, apex retuse, rounded front margin broad rounded. Pollinia 2 waxy conic elongate, flat beneath, no disc. Rostellum broad, rounded, bi-lobed. Clinandrium with a denticulate elevate margin.

Kao Nawng, Bandon, 1,500 feet.

Resembling *C. vesicatum* of the Fiji Islands.

BURMANNIACEÆ.

7. *GYMNOSIPHON APHYLLUM*. BLUME.

Kao Nawng, Bandon, 1,200-2,000 feet. No. 5788. Flowers purplish blue. *Distrib.*—Malaya.

AROIDEÆ.

8. *SCINDAPSUS SCORTECHINII*. HOOKER, FIL.

Kao Nawng, Bandon, 4,000 feet. *Distrib.*—Mountains of the Malay Peninsula.

THE PLANTS OF KOH SAMUI AND KOH PENNAN.

BY H. N. RIDLEY, C.M.G., M.A., F.R.S., LATE DIRECTOR OF GARDENS,
STRAITS SETTLEMENTS.

THE small collection of plants from the islands of the North-east coast of the Malay Peninsula made by Mr. H. C. Robinson shows that the flora has some affinity with that of the more southern part, with an admixture of more distinctly Siamese plants. The occurrence of *Rhuacophila* so far north is of some interest and extends its region considerably. Of the new species the most interesting is the *Trachelospermum*, allied to Himalayan and Chinese species.

RANUNCULACEÆ.

1. CLEMATIS SMILACIFOLIA. WALL.

Koh Samui; Koh Pennan. No. 5716.

2. NARAVELLA LAURIFOLIA. WALL.

Creeping, flowers scented. Koh Samui. No. 5731.

DILLENIACEÆ.

3. TETRACERA ASSA. DC.

Koh Samui. No. 5705.

4. TETRACERA FRAGRANS. RIDLEY.

Koh Samui. *Distrib.*—Southern Siam.

ANONACEÆ.

5. ELLIPEIA PUMILA, KING.

Distrib.—Perak.

6. MITREPHORA ALBA. *sp. nov.*

A small tree, 40 feet tall, bark of branches grey. Leaves thinly coriaceous, lanceolate, apex acuminate, base rounded, smooth glabrous, 8-9.5 cm. long, 2.5-3 cm. wide, nerves fine, 10 pairs, elevate on both sides, finely reticulate, midrib elevate beneath, depressed above. Petiole 2 mm. long. Flowers white or pinkish white, in short racemes, pubescent. Bracts small ovate, raceme 2 mm. long. Peduncle and pedicels 5 mm. long each. Sepals ovate, subacute, hairy, 2 mm. Petals, outer, broadly ovate, base broad hairy on both sides, 1.5 cm. long and as wide; inner connivent, spathulate sub-trilobed, claw narrow, side lobes rounded, central one short sub-acute, hairy on both sides, 1.1 cm. long, 1.2 cm. wide across the lobes. Stamens very numerous, short oblong. Connective not wider than the tip of the anther, small truncate. Ovaries 6 conic hairy. Stigmas connate, glabrous. Torus rather tall, hairy.

Koh Samui, western side. No. 5717.

This species is most closely allied to *M. grandiflora*, Bedd. of South India. The inner petals, however, are much broader and more

nearly 3-lobed than in any other species. The stamens are distinctly those of a *Mitrephora*, otherwise in the shape of the inner petals and other points, it more resembles an *Orophea*.

POLYGALACEÆ.

7. POLYGALA ARILLATA, BUCH. HAM.

A form with rather small coriaceous leaves, 2.5 to 3.7 cm. long by 1. to 1.3 cm. wide. Flowers small, 1.3 cm. long, all terminal and quite glabrous. A new record for this region. *Distrib.*—India.

PORTULACACEÆ.

8. PORTULACA QUADRIFIDA, LISS.

S.E. Koh Penman. No. 5770. Flowers yellow. A tropical weed.

HYPERICINÆÆ.

9. CRATOXYLON FORMOSUM, BENTH AND HOOKER FIL.

Koh Samui. No. 5728.

GUTTIFERÆ.

10. CARCINIA MERGUIENSIS, WIGHT.

Koh Samui.

Not a typical form, the leaves being intermediate in form between that species and *G. rostrata*, Benth. and Hooker fil.

TERNSTROEMIACEÆ.

11. SCHIMA NORONHE, RHEINWARDT.

S.E. Koh Pennan. No. 5758. *Distrib.*—Malaya.

MALVACEÆ.

12. SIDA ACUTA, ROXB.

Koh Pennan. No. 5762

Distrib.—Eastern tropics. A common weed.

TILIACEÆ.

13. GREWIA UMBELLATA, ROXB.

Koh Samui. No. 5734.

14. GREWIA PANICULATA, ROXB.

Koh Samui (No. 5709) and Koh Pennan.

Both common on the Malay Peninsula.

MALPIGHIACEÆ.

15. TRISTELLATEIA AUSTRALASICA, A. RICH.

Koh Pennan. No. 5739. *Distrib.*—Malaya to Australia.

GERANIACEÆ.

16. IMPATIENS WRAYI, HOOKER FIL. (?).

Koh Pennan.

I am doubtful as to this as the specimens have not preserved well. *Distrib.*—The Malay Peninsula.

RUTACEÆ.

17. *CLAUSENA EXCAVATA*. BURN.

Koh Samui. *Distrib.*—The Eastern Tropics.

18. *GLYCOSMIS RUPESTRIS*. RIDLEY.

Koh Samui. *Distrib.*—Kedah.

OLACINÆ.

19. *OLAX IMBRICATA*, ROXB.

S.W. Koh Pennan. *Distrib.*—Burma, Malaya.

CELASTRINÆ.

20. *HIPPOCRATEA FERRUGINEA*. KING.

Koh Samui. No. 5735. A climber, flowers greenish-brown.

A very imperfectly known plant, only previously collected in Penang. The disc of the flower is very thick and lobed: King describes the anthers as one-celled with transverse dehiscence; in these specimens they dehisce into four loculi. The pistil is pubescent.

21. *SALACIA FLAVESCENS*. KURZ.

Hills of Koh Samui. No. 5738.

Common in the Malay Peninsula.

RHAMNÆ.

22. *COLUBRINA ASIATICA*. BENGE.

Koh Samui. No. 5707. Common on sea shores. *Distrib.*—Indo-Malaya.

LEGUMINOSÆ.

23. *CROTALARIA SALTIANA*, ANDR.

Koh Samui. No. 5711. *Distrib.*—Indo-Malaya.

24. *DESMODIUM UMBELLATUM*, DC.

Koh Penan. No. 5766. *Distrib.*—Indo-Malaya.

MYRTACEÆ.

25. *RHODOMYRTUS TOMENTOSA*. WIGHT.

Koh Samui. No. 5703.

26. *RHODAMNIA TRINERVIA* var *SPECTABILIS*. BLUME.

Koh Pennan. No. 5775.

A form with few flowers on pedicels 1.5 cm. long. Calyx 3 mm. and petals 4 mm. long. Most resembling a Tenasserim form.

27. *EUGENIA SIAMENSIS*. CRAIB.

Hills of Koh Samui. Flowers deep rose pink, anthers yellow. Undoubtedly Craib's Siamese plant but very like a thin narrow-leaved form of *E. macrocarpa*, Roxburgh.

28. *EUGENIA SUAVIS*, *sp. nov.*

A big tree, 75 feet tall, the bark of the branches light brown. Leaves coriaceous, lanceolate acute, bases cuneate, drying pale grey,

keel prominent below, depressed above, nerves about 11 pairs, prominent, inarching just within the margin, 15 cm. long, 3.5 to 4 cm. wide, petiole 1.5 cm. long, stout. Cymes large, lax, lateral on the branches below the leaves, 10 cm. long, 8 cm. across. Peduncles 2 to 5 cm. long, stout-angled, branches similar, the longest 5 to 6 cm. long, branchlets trichotomous, with about 6 sessile crowded flowers at the tip. Bracts deciduous. Calyx tube, infundibuliform, 2 mm. long, 4 mm. across. Petals connate, falling off in a rounded cap. Stamens short, nearly 5 mm. long. Style 5 mm. much longer than the calyx, slender.

Flowers scented, whitish.

Hills of Koh Samui. No. 5730.

This belongs to the Jambolana section and is allied to *E. operculata*, Roxb. but has larger spreading cymes and very different flowers.

MELASTOMACEÆ.

29. SONERILA SUCCOSA. *sp. nov.*

Herbaceous leaves few, whorled at the top of the stems. Stems erect or ascending weak, 20-30 cm. long. Leaves ovate lanceolate to ovate, fleshy obtuse denticulate with short hairs on the teeth 2 to 6 cm. long, 1-4 cm. wide.

Nerves about 4 pairs, petioles 2-3 mm. long. Peduncles 4-8 cm. long. Flowers umbellate about 4 on pedicels, 3 mm. long. Calyx long, smooth narrow with acute points 5 mm. long. Petals 3 lanceolate acuminate 7 mm. long, 4 mm. wide, apparently white with rather long pink tips. Stamens 3, anthers elongate acuminate conic, orange, 7 mm. long, filaments short violet purple. Style as long, slender. Capsule smooth, goblet shaped infundibuliform with short acute lobes, 1 cm. long, 4 mm. wide.

Koh Pennan.

Nearest to *S. succulenta*, Stapf form Perak.

30. MEMECYLON EDULE VAR. OVATA. C. B. CLARKE.

Koh Pennan. No. 5749.

Flowers cobalt blue, turning lilac. *Distrib.*—Indo-Malaya.

LYTHRACEÆ.

31. PEMPHIS ACIDULA. FORST.

Koh Pennan. No. 5755. *Distrib.*—Burma and Ceylon to Malaya.

SAMYDACEÆ.

32. HOMALIUM GRIFFITHIANUM. KURZ.

Koh Pennan. No. 5748. *Distrib.*—Tenasserim to Kedah.

Small tree, about six inches in diameter. Flowers greenish-yellow, scented. Leaves small and glabrous.

RUBIACEÆ.

33. OPHIORHIZA LANCEIFOLIA. *sp. nov.*

Suffrutescent, ascending branched 15 to 20 cm. tall, young parts scurfy.

Leaves equal, lanceolate acuminate at both ends, 6.5 cm. long, 5 to 10 mm. wide. Nerves 7 pairs curved glabrous. Stipules very small, reduced to short points. Peduncle slender, 2 cm. long branches of the cyme about 6, 1.5 cm. long to 2 cm. Flowers about 7 on a branch on pedicels under 1 mm. long. Calyx very short, campanulate, with small ovate obtuse lobes. Corolla 5 mm. long (drying red) tube stout hairy at the base of the 5 ovate lanceolate lobes which are as long as the tube. Stamens very short half the length of the corolla, filaments very short, anthers linear, tips notched, or stamens as long as the corolla, tips exsert at the mouth. Style as long as the corolla clubbed. Flowers white.

Hills of Koh Samui. No. 5739. A herb on rocks in the stream.

Nearest to *O. fruticosa*, Ridley of the limestone rocks of Selangor but the leaves are glabrous and the petiole and peduncle longer.

34. HEDYOTIS PINIFOLIA, WALL.

Koh Samui. No. 5741. Common in Malaya.

35. RANDIA PENANGENSIS, KING AND GAMBLE.

Koh Samui. No. 5743. *Distrib.*—Malay Peninsula.

36. PRISMATOMERIS ALBIDIFLORA, THW.

Koh Pennan. No. 5760. *Distrib.*—Indo-Malaya.

37. CHASALIA CURVIFLORA, THW.

Koh Pennan. Flowers whitish violet. *Distrib.*—Indo-Malaya.

38. PSYCHOTRIA VIRIDIFLORA, HOOKER, FIL.

Koh Pennan. No. 5778.

COMPOSITE.

39. COSMOS BIPINNATUS, CAV.

Koh Pennan. No. 5762. A tropical weed.

MYRSINÆ.

40. ARDISIA SOLANACEA, ROXB.

Koh Samui. No. 5746. *Distrib.*—Indo-Malaya.

EBENACEÆ.

41. DIOSPYROS LANCEAEFOLIA, ROXB.

Koh Pennan. Tree about 10 inches in diameter. Flowers white. *Distrib.*—Assam, Burma, Malay Peninsula and Sumatra.

APOCYNACEÆ

42. CERBERA ODALLAM. GAERTN.

Koh Samui (banks of mountain stream on granite) Koh Pennan. Tree 25 feet tall. *Distrib.*—Tropical Asia.

43. LOCHNERA ROSEA. RCHB. FIL.

Koh Samui. No. 5704.

Now established all along the Malay Coasts. Native of South America.

44. TRACHELOSPERMUM (§ AXILLARES) LAURIFOLIUM, *sp. nov.*

Erect shrub. Leaves opposite, coriaceous, lanceolate acuminate, base shortly cuneate, 14 cm. long, 3 cm. wide, nerves 9 pairs, prominent beneath, midrib depressed above, elevate beneath, petiole thick, 3 mm. long. Cymes axillary, peduncle thick 1-2 mm. long. Flowers 5-7, subumbellate, pedicels thick, 7 mm. long, glabrous. Bracts very small ovate rounded. Calyx 5-lobed, lobes rounded quite obtuse fleshy pubescent 2 mm. long, scales alternating with them short narrow lanceolate obtuse. Corolla tube 6-9 mm. long, cylindric glabrous, yellowish, lobes 5 contort, 6-9 mm. long, oblong obtuse broad pubescent on the upper face with stellate hairs. Stamens adnate to corolla mouth, exert forming a cone, anthers lanceolate, outside pubescent with a terminal hair tuft, inside glabrous with a swollen boss at the back and a tuft of hairs on the connective, base of anther cells slightly divaricate. Ovary bilobed and four grooved at the top, which is pubescent. Style slender, stigma conic, coronal scales round the ovary in two series, the outer ones lobed and notched (5) alternate, the inner ones (10) simple obtuse and fleshy.

Koh Pennan. No. 5764.

This species differs from *T. axillaris*, Hooker fil. in its lanceolate coriaceous leaves and larger flowers with hairy petals.

ASCLEPIADACEÆ.

45. TYLOPHORA FLAVESCENS, *sp. nov.*

A climbing herb with tomentose stems and leaves. Leaves herbaceous, ovate to ovate lanceolate, shortly cuspidate, base rounded slightly cordate 7 cm. long, 3 cm. wide, nerves 3 pairs inarching, slender petiole 5 mm. long, tomentose. Raceme axillary, peduncle 7-8 mm. long. Bracts linear very narrow. Pedicels slender 1 cm. long, all hairy. Sepals very narrow, linear acuminate hairy. Corolla glabrous, greenish yellow, lobes ovate acute, many nerved 8 mm. across. Corona lobes broad fleshy obovate with a strong keel on the inner face and a long obtuse tooth. Stamens carinate, anthers cordate, lobes rounded with a short free central filament. Pollinia 2 elliptic pale yellow, hardly waxy. Carrier very minute. Stigma capitate, flat at the top stellate.

Koh Pennan. No. 5751.

Allied to *T. asthmatica*, Wight, but differs in the tomentose stem and leaves and glabrous corolla and the narrower corona lobes which are long toothed and strongly keeled.

46. TYLOPHORA ASTHMATICA, WIGHT.

Koh Pennan. *Distrib.*—Indo-Malaya.

47. HOYA GLOBIFLORA, *sp. nov.*

Stems pale corky, 2 mm. in diameter. Leaves ovate subacute with rounded bases 6.5 cm. long, 3.5 cm. wide, nerves 3 pairs and nervules few visible when dry, one pair from the base ascending, the others short horizontal soon broken up, petiole very thick, 6 mm. long. Peduncles stout 3 to 4 cm. long, raceme 1 cm. long, stout, occasionally branched. Flowers innumerable forming a large globose umbel 4-5 cm. across when dry. Pedicels 1.5 cm. long. Sepals 5, short ovate obtuse. Corolla 1 cm. across waxy white a pink tinge, lobes ovate sub-obtuse. Corona large, upper lobe short erect tooth-like, lower ovate, spreading obtuse, apex emarginate above depressed. Staminal column short. Anther cells incumbent over the style apex. Pollen masses linear oblong straight blunt flattened, caudicles very minute (hardly any). Carrier small, triangular, dark brown.

Koh Pennan. No. 5756. Creeper.

48. HOYA PARASITICA, WALL.

Koh Samui. No. 5718. Common in the Malay Peninsula.

49. DISCHIDIA HIRSUTA, DC.

Koh Samui. *Distrib.*—Malaya.

LOGANIACEÆ.

50. FAGREA OBLONGA, KING AND GAMBLE.

Koh Samui. *Distrib.*—Malay Peninsula.

51. FAGREA FRAGRANS, ROXB.

Koh Pennan. *Distrib.*—Malay Peninsula.

CONVOLVULACEÆ.

52. MERREMIA HASTATA, HULLIER.

Koh Pennan. *Distrib.*—Malaya.

SCROPHULARINEÆ.

53. STRIGA LUTEA, LOUR.

Koh Pennan. No. 5702. Flowers pale yellow. *Distrib.*—Indo-Malaya.

ACANTHACEÆ.

54. ERANTHEMUM MALACCENSE, C. B. CLARKE.

Koh Pennan (typical form); Koh Samui No. 5714. The latter is the dwarfer form, which occurs at Chupeng in Perlis.

55. RUELLIA REPENS, LINN.

Koh Pennan. No. 5755. *Distrib.*—Tropical Asia.

56. *JUSTICIA FLABELLIGERA*, *sp. nov.*

A slender-stemmed herb, over 11 cm. tall, glabrous. Leaves thin, herbaceous subequal ovate shortly acuminate obtuse; base cuneate, shortly, often unequally, bilobed, with rounded points, 14 cm. long, 8 cm. wide. Nerves 7-9 pairs. Petiole 3 mm. Spikes 20 cm. long, slender subterminal elongate, floriferous nearly to the base. Flowers solitary, sessile opposite, very numerous over 40 in spike. Bracts foliaceous, green 5 mm. long, the petiole 3 mm. long, narrow, blade transversely elliptic apiculate, narrowed at the base, into the petiole. 2 mm. long, 3 mm. wide, 6 nerved with long hairs on the edge. Sepals linear, subulate 2 mm. long glabrous. Corolla greenish white 9 mm. long. Upper lip narrow, lanceolate obtuse, lower obovate obtuse rounded. Palate finely ribbed. Stamens 2. anther-cells ellipsoid separate, the lower one with a very short blunt spur. Capsule 1 cm. lobes lanceolate, gradually narrowed to the base, obtuse glabrous. Seeds 4, flat, discoid cordate, corky warted light brown, 3 cm. long.

Hills of Koh Samui. No. 5736.

Apparently a tall plant, with long spikes of small flowers and leafy bracts, somewhat spade shaped.

VERBENACEÆ.

57. *CALLICARPA LONGIFOLIA*, LAM.

Koh Samui. No. 5737. *Distrib.*—Malaya.

58. *CLERODENDRON PANICULATUM*, LINN.

Koh Samui. No. 5706. *Distrib.*—Malaya.

59. *CLERODENDRON CITRINUM*, *sp. nov.*

A bushy hardwood shrub about five feet tall. Leaves opposite, herbaceous obovate irregularly lobed base cuneate apex acuminate glabrous, 13 cm. long, 7 cm. wide. Panicle terminal lax 10 cm. long by 10 cm. wide. Pedicels short. Calyx lobes lanceolate pubescent 2 mm. long. Corolla pubescent 1.7 cm. long tube slender lobes rounded oblong, edges ciliate, lemon yellow. Stamens, filaments 4, 3 cm. long filiform, anthers oblong dorsifixed with a groove in the back.

Koh Pennan. No. 5753. Slightly scented.

Allied to *C. paniculatum*, Linn. differing in the colour of the flowers, which are pubescent and the cuneate leaf base. The leaves are scurfy pustular beneath.

LABIATÆ.

60. *ORTHOSIPHON STAMINEUS*, BENTHAM, VAR. with violet purple flowers.

Koh Pennan. No. 5761. *Distrib.*—Siam.

61. *GOMPHOSTEMNEA OBLONGUM*, WALL.

Koh Pennan. *Distrib.*—Malay Peninsula.

62. *LEUCAS ZEYLANICA*, R. BR.

Koh Samui. No. 5708. *Distrib.*—Tropical Asia.

APETALÆ.

LAURINEÆ.

63. LITSEA AMARA, BLUME.

West side of Koh Samui. Nos. 5722, 5742. Common in Malaya.

EUPHORBIACEÆ.

64. ANTIDESMA GHOESEMBILLA, GAERTN.

Koh Penan. No. 5759. *Distrib.*—Indo-Malaya.

ORCHIDEÆ.

65. MICROSTYLIS SPECTABILIS, *sp. nov.*

Whole plant, 50 cm. tall, with thick woolly roots, base of stem 10 cm. long covered with pale papery sheaths, cylindric. Leaves about 6 elliptic ovate acute 9-12 cm. long, 3-4 cm. wide, 3-5 nerved, petiole and sheath 5 cm. long. Raceme dense long, very many flowered. Bracts lanceolate acuminate deflexed 4 mm. long. Pedicels 4 mm. long. Dorsal sepal linear oblong obtuse 4 mm. long laterals semi-ovate obtuse 3-nerved twice as broad as the dorsal sepal.

Petals linear oblong obtuse little shorter than the dorsal sepal. Lip shorter than the lateral sepals, limb oblong ending in four linear acuminate teeth. Fovea large ovate with everted edges auricles lanceolate acuminate as long as the petals, all deep crimson. Column yellow large with rounded stelidia, a broad rostellum, anther rather flat, shortly broadly ovate obtuse 2-celled, notched at the back. Pollinia narrowly pyriform.

Koh Pennan.

A very distinct plant of the *M. congesta* type with remarkably long auricles to the lip and a deep fovea with strongly evert margins.

66. DENDROBIUM KUNSTLERI, HOOKER, FIL.

Koh Samui. *Distrib.*—Malay Peninsula.

67. BULBOPHYLLUM (CIRRHOPETALUM) DENTIFERUM, *sp. nov.*

Rhizome slender elongate covered with sheaths 7 mm. long, eventually breaking up into fibres. Pseudobulbs 7-12 cm. apart, cylindric, 4 cm. long. Leaf thinly coriaceous lanceolate, tip obtuse narrowed to the base 15 cm. long, 3-5 cm. wide. Scapes 8 cm. tall from the base of the pseudobulb with a few sheaths at the base. Flowers about 12, "spotted purplish magenta and white," pedicels slender 12 mm. Dorsal sepal ovate, edge denticulate with a few long hairs at the tip, 5 nerved 5 mm. long, laterals connate lanceolate glabrous tips very shortly free acute 13 mm. long, 3 mm. wide. Petals oblong 4 mm. long, blunt slightly falcate denticulate with a few hairs on the tip. Lip very narrow linear cylindric fleshy with a broader base. Column rather long with a long curved foot. Stelidia oblong ending in a long seta.

West side of Koh Samui. No. 5719.

Allied to *B. rupicolum*, Ridley, and *B. curtisii*, Rolfe, but with a larger flower and narrower lip.

68. *CALANTHE ANTHROPOPHORA*. *sp. nov.*

Roots very stout, woolly. Leaves broadly lanceolate acuminate 35 cm. long, 9.5 cm. wide, nerves prominent 3, petiole 15 cm. long. Scape stout pubescent 55 cm. long, raceme many-flowered 11 cm. long. Bracts ovate acuminate lower ones 5 mm. long, 2 mm. wide, mucronulate pubescent, upper ones smaller, persisted. Pedicels 5.5 cm. pubescent. Sepals elliptic obovate mucronulate pubescent 5-nerved 11 mm. long, 6 mm. wide. Petals oblanceolate, 3-nerved much narrower. Lip 4-lobed, the lateral lobes linear oblong truncate 1 cm. long, 2 mm. wide, slightly enlarged at the tip, the base of the mid lobe linear 3 mm. long, lobes linear oblong truncate widely divaricate, 12 mm. long, 2 mm. wide. Callus of numerous papillae in three rows, spur slender, filiform pubescent, 3 mm. long. Column stout.

Hills of Koh Samui No. 5701. Flowers white tinged with purple the base of the lip with three orange ridges. Flowering in May.

Allied to *C. veratrifolia*, R. Bp. but with a curious 4-lobed lip with very narrow spreading lobes.

69. *CYMBIDIUM CAULESCENS*, *sp. nov.*

Stem ascending with thick roots, 6-7 cm. long densely covered with distichous lanceolate acute sheathing leaves 2 cm. long striate. Leaves at the apex of the stem thinly coriaceous lanceolate acute recurved, closely striate narrowed slightly at the base, 3.5 cm. long, 0.6 to 1 cm. wide. Raceme from the leaf axil, slender 12-14 cm. long base nude. Flowers 5 to 8 distant. Bracts lanceolate acuminate 1 cm. long. Pedicel slender 1.5 cm. long. Sepals lanceolate acuminate slightly falcate. Petals similar 1.5 cm. long, 3 mm. wide. Lip shorter, 3-lobed side lobes shortly free, rounded at the tip, mid-lobe lanceolate acuminate acute; keels 2 low thick on the disc ending abruptly on the mid-lobe. Column arcuate, winged half way down, 7 mm. long. Margins of clinandrium little elevate. Pollinia 2 obovoid.

Koh Samui.

Near *C. lancifolium*, Hooker, but with no pseudobulb and a long developed stem with narrow leaves.

70. *THELASIS MACROBULBON*. RIDLEY.

Koh Samui. No. 5727. *Distrib.*—Malay Peninsula.

71. *HOEMARIA DISCOLOR*. LINDLEY.

Koh Samui. *Distrib.*—Malay Peninsula.

SCITAMINEÆ.

72. *KEMPFERIA PULCHRA*. RIDLEY.

Koh Samui, damp places on banks in jungle and on damp rocks. No. 5700.

Corolla lilac mauve with white throat.

LILIACEÆ.

73. GLORIOSA SUPERBA, LINN.

Koh Pennan. No. 5757. Flowers orange or partially chrome yellow. *Distrib.*—Tropical Asia.

74. RHUACOPHILA JAVANICA, BLUME.

Koh Samui. In marshy ground, scarce. *Distrib.*—Malaya.

ROXBURGHIIACEÆ.

75. STEMONA TUBEROSA, LOUR.

Koh Samui. On rocks. *Distrib.*—Cochin China, Siam and Malay Peninsula.

COMMELINACEÆ.

76. COMMELINA NUDIFLORA, LINN.

Koh Pennan. No. 5771. *Distrib.*—Cosmopolitan.

AROIDEÆ.

77. LASIA ACULEATA, LOUR.

Koh Samui.

78. ANADENDRUM MONTANUM, SCHOTT.

Koh Samui No. 5728. "Spathe ivory white." This certainly unusual as it generally dull green. *Distrib.*—Malay Peninsula.

CYPERACEÆ.

79. CYPERUS POLYSTACHYUS, LINN.

Koh Samui. *Distrib.*—Cosmopolitan.

80. SCIRPUS BARBATUS, BOECK.

Koh Samui. *Distrib.*—Tropics generally.

GRAMINEÆ.

81. SETARIA GLAUCA, BEAUV.

Koh Pennan. *Distrib.*—Cosmopolitan.

82. ISCHENUM MUTICUM, LINN.

Koh Pennan and Koh Samui. No. 5711. *Distrib.*—Tropical Asia.

83. POGONATHERUM POLYSTACHYUM, KUNTH.

Koh Samui. *Distrib.*—Tropical Asia.

84. ARUNDO KARKA, RETZ.

Koh Samui. No. 5715. *Distrib.*—Tropical Asia.

FILICES.

85. DAVALLIA SOLIDA, SWARTZ.

Koh Samui. No. 5713. *Distrib.*—Tropical Asia.

LYCOPODIACEÆ.

86. PSILOTUM TRIQUETRUM, Sw.

Koh Pennan. No. 5754. *Distrib.*—Tropical Asia.

LIST OF A SMALL COLLECTION OF MAMMALS AND
BIRDS FROM THE KRAU RIVER, WESTERN
PAHANG.

By HERBERT C. ROBINSON AND C. BODEN KLOSS.

IN October, 1913, a small collecting party was despatched to Eastern Pahang with instructions to search for the rare Argus Pheasant *Rheinwartius ocellatus nigrescens*, Hartert, which was originally obtained on the Benom massif by Waterstradt's Dyak collectors and was subsequently found to be not uncommon on the lower slopes of Gunong Tahan.

Owing however to bad weather and the impossibility of obtaining transport our party only ascended the Krau river for a couple of days in boats and the collections, therefore, only represent the fauna of the outer and lower foot-hills.

A few of the species obtained are, however, local and rare, and the list is therefore given in full.

The reference cited is to a previous paper by Kloss in this Journal on the Mammals and Birds of Pahang. (Vol. iv, pp. 152-166.)

MAMMALS.

1. MACACA IRUS (F. CUVIER).

2 ♂.

2. TRAGULUS CANESCENS, MILLER.

1 ♂, 1 ♀.

3. TRAGULUS RAVUS, MILLER.

Kloss, p. 146.

1 ♂, 1 ♀.

4. RATUFA MELANOPEPLA, MILLER.

3 ♂.

5. SCIURUS PREVOSTII, DESM.

Kloss, p. 148.

1 ♀.

The specimens illustrate the first stage of *S. prevostii* towards its form *S.p. wrayi*, Kloss; the upper part of the fore limb and a portion of the lateral stripe being faintly washed with fulvous.

6. SCIURUS CONCOLOR. BLATH.

Kloss, p. 149.

1 ♀.

7. SCIURUS MINEATUS.

Kloss, p. 149.

1 ♂.

8. *SCIURUS TENUIS*, HORSF.

Kloss, p. 150.

4 ♂, 1 ♀.

9. *SCIURUS ROBINSONI ALACRIS*, THOS.

Kloss, p. 150.

1 ♂, 1 ♀.

10. *LARISCUS JALORENSIS*, BONH.

Kloss, p. 150.

7 ♂, 7 ♀.

11. *RHINOSCIURUS TUPAIODES*, GRAY.

Kloss, p. 150.

2 ♂.

12. *EPIMYS VOCIFERANS* (MILLER).

Kloss, p. 151.

2 ♂, 1 ♀.

13. *EPIMYS PELLAX* (MILLER).

Kloss, p. 151.

1 ♀.

14. *EPIMYS ASPER* (MILLER).

Kloss, p. 151.

1 ♀.

15. *TUPAIA GLIS FERRUGINEA*, RAFFLES.

Kloss, p. 152.

3 ♂, 1 ♀.

16. *TUPAIA MALACCANA*, ANDERSON.

Kloss, p. 152.

4 ♂, 3 ♀.

17. *RHINOLOPHUS TRIFOLIATUS*, TEMM.

1 ♂.

BIRDS.

PHASIANIDÆ.

1. *RHIZOTHERA LONGIROSTRIS* (TEMME).

1 ♂, 2 ♀.

Evidently fairly common.

2. *POLYPECTRON MALACCENSIS* (SCOP.).

1 ♂, 1 ♀ imm.

A characteristic lowland and swampy jungle bird.

3. *ARGUSIANUS ARGUS* (LINN.).

Kloss, p. 152.

1 ♂.

FALCONIDÆ.

4. *MICROHIERAX FRINGILLARIUS* (DRAP.).

Kloss, p. 153.

2 ♂, 1 ♀.

STRIGES.

5. KETUPA KETUPA (HORSF.).

1 ♀.

PSITTACI.

6. PSITTINUS INCERTUS (SHAW).

Kloss, p. 153.

1 ♀.

ALCEDINIDÆ.

7. CEYX TRIDACTYLA (PALL).

Kloss, p. 154.

1 ♀.

8. CEYX EUERYTHRA. SHARPE.

Kloss, p. 154.

1 ♂, 2 ♀.

9. HALCYON CONCRETUS (TEMN.).

Kloss, p. 154.

1 ♂, 1 ♀.

MEROPIDÆ.

10. MEROPS SUMATRANUS (RAFFLES).

Kloss, p. 154.

1 ♂, 1 ♀.

CAPRIMULGIDÆ.

11. LYNCCORNIS TEMMINCKI, GOULD.

1 ♀.

CYPSELIDÆ.

12. CHÆTURA LEUCOPYGIALIS, BLYTH.

Kloss, p. 154.

1 ♂.

TROGONIDÆ.

13. PYROTROGON KASUMBA (RAFFLES).

1 ♂.

14. PYROTROGON DUVAUCELI (TEMN.).

Kloss, p. 154.

1 ♂.

15. PYROTROGON ORROPHLEUS CAB. AND HEINE.

1 ♂.

After many years collecting, this species, which has not hitherto been represented in any of the local collections, has at last turned up. It is probable that it is confined to the south of the Peninsula where we have done comparatively little collecting and does not extend north of the territory of Malacca where Hume's collectors found it comparatively common. It is separated at a glance from *P. duvauceli* by its larger size, the entire absence of scarlet on the rump, the duller colour of the under surface and the narrower white

vermiculations on the wing coverts. It can hardly be regarded as a sub-species of *P. duvauceli* as that species occurs throughout the districts occupied by the present form.

Moulton in *Journ. Straits Branch Roy. Asiat. Soc.* No. 67, p.p. 151 (1914) regards *Pyrotrogon vidua* (Ogilvie Grant) as a very doubtful sub-species of this bird which is also recorded from Central Borneo by Buttikofer. The birds described by Grant as *Harpactes vidua* in *Cat. Birds Brit. Mus.* XVII, p. 501 (1892) came from Mounts Kinabalu and Dulit in N. W. Borneo.

CUCULIDÆ.

16. HIEROCOCCYX NANUS, HUME.

Shelley, *Cat. Birds Brit. Mus.*, xvii, p. 238 (1892).

A nearly adult male agrees well with Hume and Shelley's description of this rare cuckoo, which is new to the Federated Malay States Museums. Wing, 5.6; tail, 5.5 in.

17. CACOMANTIS MERULINUS (SCOP.).

Kloss, p. 155.

1 ♀.

18. UROCOCCYX ERYTHROGNATHUS (HARTL.).

Kloss, p. 152.

1 ♀.

CAPITONIDÆ.

19. CHOTORHEA MYSTACOPHANES (TEMME.).

Kloss, p. 155.

1 ♂.

PICIDÆ.

20. PYRRHOPICUS PORPHYROMELAS (BOIE).

1 ♂, 1 ♀.

21. MICROPTERNUS BEACHYURUS (VIEILL.).

Kloss, p. 156.

1 ♀.

22. CHRYSOPHLEGMA HUMII, HARGITT.

Kloss, p. 156.

2 ♂.

23. SASIA EVERETTI, HARGITT.

Kloss, p. 157.

1 ♂, 1 ♀.

EURYLEMIDÆ.

24. CALYPTOMENA VIRIDIS, RAFFLES.

Kloss, p. 157.

1 ♂.

PITTIDÆ.

25. PITTA CÆRULEA, RAFFLES.

1 ♂.

This fine species, though generally distributed throughout the length of the Peninsula, is everywhere rare; it is generally met with in low and swampy country.

26. *PITTA COCCINEA*, EYTON.

2 ♂.

Fairly common in low and swampy forest.

27. *PITTA CUCULLATA*, HARTL.

1 ♂, 6 ♀.

Common throughout the Peninsula in the winter months and, partially at any rate, migratory.

28. *EUCICHLA BOSCHII*, MÜLL. AND SCHLEG.

Kloss, p. 158.

2 ♂, 2 ♀, ♀ imm.

Collections made since the date of Kloss's note show that this species is fairly common throughout Western Pahang, frequenting the drier portions of the lower country forests especially near the limestone hills. The specimens ascribed to "Malacca" in the old trade collections from that settlement were probably obtained in the Triang or other districts of Western Pahang.

MUSCICAPIDÆ.

29. *PHILENTOMA VELATUM* (TEMM.).

1 ♂, 1 ♀.

30. *RHINOMYIAS PECTORALIS* (SALVAD.).

Kloss, p. 159.

1 ♂.

The question of the proper name for this much discussed species is shrouded in much confusion and must be deferred for the present. There are, at any rate, at least two applicable names earlier in date than that of Salvadori.

31. *ERYTHROMYIAS MUELLERI* (BLTH.).

Kloss, p. 158.

1 ♀.

Normally a submontane bird, only occasionally found at low elevations.

CAMPOPAGIDÆ.

32. *PERICROCOTUS CINEREUS*, LAFR.

1 ♂, 2 ♀.

A winter visitor only to the Malay Peninsula.

PYCNONOTIDÆ.

33. *CHLOROPSIS ICTEROCEPHALA* (LESS.).

Kloss, p. 159.

1 ♂, 1 ♀.

34. *PYCNONOTUS SALVADORII*, SHARPE.

Kloss, p. 161.

1 ♀.

35. *TRACHYCOMUS OCHROCEPHALUS* (GM.).

Kloss, p. 160.

1 ♂, 1 ♀.

Common everywhere along the banks of the larger rivers.

36. *RUBIGULA WEBERI* (HUME).

4 ♀.

Very local but usually abundant wherever met with.

TIMELIIDÆ.

37. *TURDINUS OLIVACEUS* (STRICKL.).

Kloss, p. 161.

1 ♀.

38. *TURDINUS MACRODACTYLUS*, STRICKL.

Kloss, p. 161.

4 ♂, 2 ♀.

39. *ERYTHROCICHLA BICOLOR* (LESS.).

Kloss, p. 161.

1 ♂, 1 ♀.

40. *ANUROPSIS MALACCENSIS*, HARTL.

Kloss, p. 162.

1 ♂, 1 ♀.

41. *DRYOCATAPHUS NIGROCAPITATUS* (EYTON).

Kloss, p. 161.

1 ♂, 1 ♀.

42. *STACHYRIS POLIOCEPHALA* (TEMM.).

Kloss, p. 162.

2 ♂, 1 ♀.

The preceding six species are all extremely common in heavy jungle throughout the Peninsula, away from the coastal zone up to about 2,000 feet in elevation.

43. *STACHYRIS LEUCOTIS* (STRICKL.).

1 ♂, 1 ♀.

Decidedly local and not found in the more northern parts of the Peninsula; we have only found it common on the hills of Negri Sembilan.

44. *KENOPIA STRIATA* (BLYTH).

Kloss, antea., vol. iv, p. 232.

2 ♂, 1 ♀.

Except apparently in the south of the Peninsula, this is a decidedly rare species throughout our area. In addition to the specimens cited by Kloss it has recently been found not uncommon at Rawang, in the low country of Selangor.

TURDIDÆ.

45. *HYDROCICHLA RUFICAPILLA* (TEMM.).

Kloss, p. 163.

2 ♂.

Exceedingly common on clear water streams in old jungle.

46. HYDROCICHLA FRONTALIS (BLYTH).

Kloss, p. 163.

1 ♀.

Very much rarer than the preceding.

47. LARVIVORA CYANEA (PALL).

1 ♂, 1 ♀.

LANIIDÆ.

48. HEMIPUS OBSCURUS (HORSF.).

Kloss, p. 164.

1 ♀.

49. PLATYLOPHUS ARDESIACUS, CAB.

Kloss, p. 164.

1 ♂, 2 ♀.

DICRURIDÆ.

50. CHAPTIA MALAYENSIS (HAY).

Kloss, p. 164.

1 ♂.

51. DISSEMURUS PARADISEUS (LINN.).

Kloss, p. 164.

1 ♂.

ORIOOLIDÆ.

52. ORIOLUS ZANTHONOTUS, HORSF.

1 ♂.

NECTARINIIDÆ.

53. ÆTHOPYGA TEMMINCKI (S. MÜLL.).

1 ♂.

The only district in the Malay Peninsula where this beautiful sun-bird is at all common is the hill country of Negri Sembilan, though it has also been found on Bukit Kutu in Selangor, the Taiping Hills in Perak, and in the Siamese State of Trang. In the mountains of Western Sumatra it is very abundant.

54. ARACHNOTHERA LONGIROSTRIS (LATH.).

Kloss, p. 166.

1 ♂.

55. ARACHNOTHERA ROBUSTA, MÜLL AND SCHLEG.

1 ♂.

The rarest of the genus in the Malay Peninsula. With the exception of a small series from Trang we only possess two other specimens, from Ulu Gombak and Dusun Tua, both in the State of Selangor.

DICÆIDÆ.

56. PRIONOCHILUS MACULATUS, TEMM.

Kloss, p. 166.

1 ♂.

NOTES ON THE ABORIGINAL INHABITANTS OF IJOK IN THE DISTRICT OF SELAMA, PERAK.

By IVOR H. N. EVANS, B.A., ASSISTANT F.M.S. MUSEUMS.

(PLATE XVI).

THE following notes on the aborigines of Ijok in the Selama * District were made during the months of April and May, 1913. Perhaps one of the most noteworthy facts with regard to these people is that although they are in close contact and intercourse with the aborigines of Lenggong, Sumpitan, and Kuala Kenering—Sumpitan being only some eleven miles distant from Ijok—they nevertheless speak a somewhat different dialect the speech of the Lenggong people belonging to the group of dialects generally termed Northern Sakai, while that of the aborigines of Ijok is classed as Semang, (Western Negrito). Both tribes, however, are similar in physical appearance and are undoubtedly of Negrito origin,† though it is possible that there may be a slight strain of Sakai blood among them. Inter-marriage between members of the two divisions appears to be now common. The Ijok people said that, though having but little intercourse with either, they were related in speech to the aborigines of both Selama and Kupang, the latter presumably the river of that name not far from the Kedah boundary: in this they are probably correct, as the Negritos of Kedah all speak dialects belonging to the Semang group, as do those of Selama itself.

The Ijok Semang showed no fear of the writer and, if not sent for after a few days, used to come in to ask if they were not wanted; of course with the idea of obtaining food and presents. They seemed to be truthful in their replies to questions though all information obtained was checked as far as possible by questioning three or more individuals.

HABITATIONS.

The Semang settlement was situated near the Chinese mine at Kilan Gunong, about four miles from Ijok. The majority of the huts were of the same type as those seen on a former visit to Lenggong (see Journ. Fed. Malay States Mus., p. 64, No. 2, Vol. V; 1914). Each hut consisted of an arch-shaped framework of bent saplings with cross pieces connecting them horizontally. This structure was covered with a thatch of *tepus* leaves, and one end of the arch was usually stopped with a mat of palm leaves on a slight framework of sticks, the open end being used as a door.

* Selama village is some 18 miles from Ijok.

† The Ijok people, however, until very recently represented as pure a strain of Negrito as is to be met with in the Malay Peninsula. The Lenggong people on the other hand have a very much larger admixture of Sakai blood. H.C.R.

The floor of the hut was partly occupied by a slight sleeping platform consisting of a sheet of split bamboo raised about a foot from the ground on a framework of small tree boughs. The rest of the hut floor with the exception of the hearth, where there was a fire of logs, was bare. Dart quivers and various small articles, such as food stirrers and porcupine quills used in mat making, were stored on the under side of the thatch, larger utensils such as cooking pots were ranged along the wall of the hut. Each married couple occupied a single hut with a slightly larger sleeping platform than that used by a bachelor. The only other type of dwelling noticed was the simple wind-shelter consisting of a sloping palm leaf thatch resting on a rectangular framework of small branches, the whole being supported in front by two posts about $4\frac{1}{2}$ ft. high with a fork at the top of each to hold the uppermost bar of the frame.

PHYSICAL CHARACTERISTICS.

The physical appearance of the Ijok people did not seem to differ to any extent from that of the Semang of Lenggong. The stomach, specially in children, was often protruberant, though the body generally was but poorly nourished. This may possibly be due to the food, when obtainable, being gorged in large quantities. The skins of most of the men and women appeared to be of a dark chocolate colour, but this was at least partly due to dirt. One young man, aged about 20 or 21, was very fairly and powerfully built and had an open and pleasant countenance, which in spite of its rather rounded forehead, low bridged nose and broad nostrils could almost be termed handsome. His skin was also rather lighter than that of the others and his body by no means unclean. Both men and women age quickly and atrophy of the muscles of the body seems to set in much more quickly than in the average European. The hair of most of the individuals seen had the peppercorn structure well developed, and the Semang themselves seem to realize that this is a racial feature, as is shown in the legend of their origin given below.

PERSONAL CHARACTER.

The remarks made in a former paper with regard to the personal character of the aborigines of Lenggong apply equally well to the people of Ijok. They have been anything but improved by constant intercourse with the Malays and Chinese, to whom they are by way of becoming hewers of wood and drawers of water. Their dependant condition has developed in them certain traits which are deplorable. They are the most inveterate beggars and ask without scruple for anything they see or want. They are also said not to be above obtaining advances of goods from either Chinese or Malays on account of rattans, ataps or other jungle produce which they promise to bring in in payment and failing to complete the bargain. In an affair of this kind it is probably a case of the "biter getting

bitten," at any rate so far as the Malay is concerned, for he is notoriously unscrupulous in his dealings with the aborigines. The Chinaman has a better name for fair dealing than the Malay, but even he probably takes care to make his cent. per cent. over every transaction. Two of the Ijok people were opium smokers, one an old man, the head of the tribe, the other a young fellow of nineteen or twenty. They seem to obtain supplies of the drug either from the miners at Klian Gunong or else from some shops a little further down the valley.

DRESS AND ADORNMENT.

The men all wore loin-cloths or chawats of European-made cloth as their sole garment, but several of them were decorated with bracelets of *akar batu*, and necklaces of the same material, the strands being tied together in a knot in front. Strings of glass beads worn crossed over the breast were also popular, and one young man had a regular collar formed of a long string of beads wound round and round the neck. The women all affected short skirts made from the common cotton sarongs worn by the Malays. Two forms of woman's dress of purely Negrito type were, however, obtained, though not seen in use; one was a short skirt of *akar batu* the other a similar garment made of narrow strips of *tërap* bark depending from a string of the same material. Two long necklaces of lotong monkey teeth interspersed with small glass beads were also purchased. These are worn by the women or children. The writer made enquiries as to the use of bark-cloth T-bandages, but was told that they were no longer worn: one of the men, however, in order to show that bark-cloth could still be made manufactured a loin-cloth from *ipoh* bark and another from *tërap* bark and brought them in to sell. Women's combs of bamboo decorated with typical Negrito patterns were common, and five specimens were purchased. One or two bracelets of plaited rattan were also collected as well as a pair of armlets of spirally twisted brass wire. The latter were, however, said to have been obtained from the Orang Bukit (*i.e.*, from one of the trans-Perak River Semang-Sakai tribes.)

WEAPONS.

The weapons in use among the Semang of Ijok do not differ in any particular from those of the people of Lenggong. The blow-pipes of their own manufacture always have the inner tube composed of two sections of bamboo placed end to end, and united by a covering section of the same material over the joint. Blow-pipes with the inner tube made from a single section of bamboo are occasionally to be seen, but these are procured from other tribes. The mouth-piece of all the blow-pipes examined was spheroidal and composed either of wood, or of wood with a covering of "getah" (rubber of some sort). The outer tubes were either not decorated at all, or had merely a few incised circles running round them at the

top and bottom. The bamboo of the outer tube was, in old specimens, of a warm red brown hue, this colour being acquired by frequent polishing with damar gum or oil, and continual smoke drying when not in use, it being customary to keep the blow-pipe on the under side of the thatch of the hut, where it is constantly in the smoke of the open fire. When thus out of use both ends of the tube are kept carefully plugged with down to prevent the entry of mud-wasps, ants, or other insects. The dart-quivers were of true Negrito type, being made from a single internode of bamboo with one septum left untouched to form the bottom of the receptacle. When in use the top, which is coverless, is often plugged with leaves. New internodes cut for the manufacture of dart-quivers are dried by filling them with hot wood ashes from the fire, but the pattern design is generally roughly scratched in first. Bamboo receptacles rather larger than the ordinary quivers are used for holding large spatulæ of *ipoh* poison, but smaller spatulæ are often found in the true quivers. These larger receptacles are also sometimes used for holding darts. A few experiments were made to test the range of the blow-pipe, and it was found that a man squatting on his haunches and holding his blow-pipe horizontally could easily shoot a dart a distance of 65 feet. A piece of white paper set on a stick as a mark at this distance was not hit in three or four attempts, but the Semang complained that they could not do themselves justice owing to the fact that previous to shooting they had broken off all the poisoned points of their darts as the trial had to take place along the bridle path, the only convenient place which could be found. This precaution was wise, as numbers of Malays quickly turned out to see what was going on. The practice took place on an almost windless day and shooting was tried in two directions. The Semangs' remarks about darts with broken points not flying true was probably quite justifiable, as the dart stem is considerably thicker just above the point than at any other place. Above this thickening in the direction of the head a small groove is cut in order that when an animal is stuck the dart may break off and leave the poisoned head in the wound. It was interesting to note the way in which the blow-pipe was treated in preparing for a shot. The performer first seized it with his right hand at the mouth-piece and with his left a little way up the stem, grasping it between the first and second fingers of the latter: using the right hand he then drew it several times smartly backwards and forwards between these two fingers meanwhile keeping in the dart which had been already inserted, by means of the right hand. Then squatting suddenly he grasped the weapon close to the end between the interlaced fingers of both hands and taking aim expelled the dart. The method employed of holding the blowpipe seems to be common to all the aborigines of the Peninsula or at any rate to all those using the bamboo blowpipe. The stem of the instrument rests partly on the upturned palms of the hands. Among the

Kayans, Dusuns and other blow-pipe using tribes of Borneo, where the blow-pipe is in use, the instrument is also grasped close to the mouth-piece but the right hand is placed above the left and both have their backs directed upwards.

MUSICAL INSTRUMENTS.

The only musical instruments seen were the bamboo stamper, the bamboo jews' harp and a peculiar kind of earth-drum made by digging a hole about a foot and a half square in the ground and stretching tightly over it a piece of tree bark tied between two short posts driven into the earth one on either side of the hole.

OTHER MANUFACTURES.

Besides weapons, articles of dress, and musical instruments the Negrits appeared to possess very few articles of their own manufacture; rough mats made of some species of Pandanus were, however, fairly common, while porcupine quills, indistinguishable from those worn in the nose, were used as implements in making them. Graters, for shredding the tubers of jungle yams and made from the stems of a kind of rattan (*rotan seni*) with the thorny spathe still adhering were in use, as were also small wooden pestles and mortars for pounding up condiments. Pandanus pouches for holding tobacco or the materials for betel chewing were common: one rather fine specimen with an inner lining of the same material and ornamented on the outside with black patterns was obtained for the Museum.

RELIGION, SUPERSTITION AND LEGENDS.

As among the aborigines of Lenggong, enquiries as to the existence of any definite forms of religious belief were productive of purely negative results, but while questioning the Semang as to their explanations of several common natural phenomena a little interesting information was obtained and also a single legend. The latter is not new, but the Ijok form is given below, as it differs from other versions in a few particulars.

LEGEND OF THE ORIGIN OF THE SEMANG.

TOLD BY THE HEADMAN OF THE SEMANG.

"Our origin was the same as that of the Malays.

"Once upon a time the King of the Mawas* monkeys, Rajah Mawas, fought with the King of Siamang† monkeys, Rajah Siamang, in the country where our ancestors lived. Our ancestors ran away from the place they lived in, being frightened by the war, and hid themselves in a plain covered with tall lalang grass. The Rajah Mawas beat the Rajah Siamang and the latter with his people ran away and hid in the same plain as our ancestors. The Rajah Mawas came and set fire to the grass and the Rajah Siamang with his people ran away and crossed the Perak river. Our ancestors did not run away, having hid themselves in porcupine burrows in order

* The Mawas is *Hylobates* sp. † The Siamang is *Symphalangus* sp.

to escape from the fire. In spite of this the fire reached them and signed their hair, and this the reason we, their descendants, have curly hair to the present day. After the war was over the King of the Brok* monkeys, Rajah Brok, became judge between the Siamang and the Mawas, and he gave judgment that the Siamang should stop on the south bank of the Perak River and the Mawas on the north bank, and thus they do till the present day, though before they had both lived on the north bank.

“The ancestors of the Malays, when the war arose, ran away down stream carrying a rice spoon with them; and that is the reason why the Malays use a rice spoon in cooking their rice. Our ancestors ran away up stream carrying a pointed stick; and that is the reason why we still use a stick for digging tubers in the jungle.”

The other information obtained was fragmentary and consisted of certain beliefs concerning the rainbow, thunder, lightning, the eclipse of the moon, and certain pantangs or tabus attaching to mother-in-law and father-in-law. These are given below.

THE RAINBOW.

“The rainbow is a fishing line. Somewhere far away there lives a king of the Dragons (Rajah Naga) who, when he requires fish, sends a servant to the river to fish for him. As the Rajah’s servant lifts his rod from the water you see his line with its two coloured thread appearing in the sky as the rainbow.”

The Negritos will not walk into the foot of a rainbow as they believe that to do so would cause them to fall sick.

THUNDER.

“Thunder is caused by the spirits who lived under the earth. When they are preparing their food and cooking it, the noise they make is heard on the earth above. This noise is what we call thunder.”

LIGHTNING.

“Lightning is caused by the children of the spirits who live under the earth. When they play at tops they flourish the cords which they use for spinning them, and these appear above the earth as lightning.”

THE SUN, THE MOON AND THE STARS.

“The stars are the children of the moon. The sun watches by day and the moon by night. If there is no moon the stars replace her; if there is a moon the stars are quenched.”

THE ECLIPSE OF THE MOON.

“Eclipses of the moon are caused by a butterfly settling on the moon and spreading its wings over it while it attempts to eat it.”

The Semang name for an eclipse in *hairup hilud* (*hairup* a butterfly and *hilud* to swallow.)

* The Brok is *Macaca* sp.

PANTANGS OR TABUS.

Of the two pantangs obtained one related to the dislike of having anything to do with a mother-in-law or father-in-law, and the other to imparting the secrets of magic. Tabus enjoining avoidance of the mother-in-law are in force in many regions of the globe; to give two examples, they are very rigidly applied by the Zulu-Kaffirs of South Africa and by the Dusuns of British North Borneo. The tabus concerning instruction in magical rites have probably been adopted by the aborigines from the local Malays, who have the same custom.

* TABUS RELATING TO THE MOTHER-IN-LAW
AND FATHER-IN-LAW.

A man may not speak to his mother-in-law nor a woman to her father-in-law and they must both avoid these relations as far as possible. If communication is necessary, an intermediary must be employed. The man may, however, speak to his father-in-law and the woman to her mother-in-law, but they must do so very respectfully.

A man may not mention the name of his mother-in-law nor a woman that of her father-in-law.

TABU CONCERNING IMPARTING THE SECRETS OF MAGIC.

Secrets of magic may not be imparted to a pupil except on Tuesday and the night preceding it. This belief, as has been stated above, has probably been adopted from the local Malays. Our Monday night, according to Malay methods of computing, becomes the night of Tuesday (*malam Selasa*) and our Tuesday night the night of Wednesday, etc.

PANTANG LANGUAGE.

It is tabu to use the ordinary names of certain wild animals when in the jungle, the idea being that a name is closely connected with the object to which it is given. Thus to mention the name of dangerous animal is, according to aboriginal ideas, almost equivalent to making it appear. A few examples of tabu words are given below in both the Ijok and Lenggong dialects.

English.	Ordinary word (Lenggong.)	Tabu word (Lenggong.)	Ordinary word (Ijok.)	Tabu word (Ijok.)
Tiger	baling	kemun	teiok	kamoit (evil beast ?)
Elephant	gajah	Intek chekeh (said to mean big animal)	gajah	adon

* Possibly adopted from the Malays. An Ijok Malay will not mention the name of his mother.

The writer is rather doubtful about the Ijok ordinary and tabu words for elephant. With regard to the "baling" and "kemun," they are both given by Skeat* as words for tiger used by various Negrito tribes. The Lenggong Semang from whom the writer got his information gave "baling" as the word ordinarily in use and "kemun" as its tabu equivalent: it will be noticed, however, that in sentences given below (page 186) the word used for tiger is the "kemun."

LOVE CHARMS.

A specimen of the so-called Chenduai flower (*Salomonina aphylla*) was bought from a Semang. The Chenduai is in great repute among the Malays as a love charm.

A CUSTOM RELATING TO DEATHS.

An encampment must always be deserted after the death of a member of the tribe.

FACE PAINTING AND NOSE PIERCING.

One young woman had stained her forehead with a broad horizontal band of red pigment. At the corners of her mouth were two smears of lime, which looked at a distance like tusks protruding from the top jaw.

Many of the men and women, especially those of some age, had the septum of the nose pierced to contain a nose-stick, though none of these were seen in use. The Semang showed the writer a specimen, made from a procupine quill.

PATTERNS ON DART QUIVERS AND COMBS.

General information concerning the patterns employed to decorate combs and quivers was very little different from that obtained at Lenggong. Certain facts, however, came out in the course of conversation with the aborigines, which seem to throw some light on the assertions made by Vaughan Stevens with regard to the meaning and use of Semang comb-patterns. He tells us that the largest and central panel of the Semang comb is called *tin-ueg* and says that the pattern of this panel represents the disease against which it is supposed to protect its wearer (*vide* Skeat and Blagden's *Pagan Races*, p. 433). In the course of putting some questions to the Ijok people regarding the names of the patterns used on their quivers the writer was told that one of their designs was called *tenwug*. When questioned as to the meaning of the word, they replied that it meant anything crossed, and pointed as an example to the trellis work railings of the rest-house steps on which they were sitting. In order to make certain that they were understood, they further volunteered the information that two cords of bead worn diagonally

* Skeat's *Pagan Races*, Vol. II, Comparative Vocabulary.

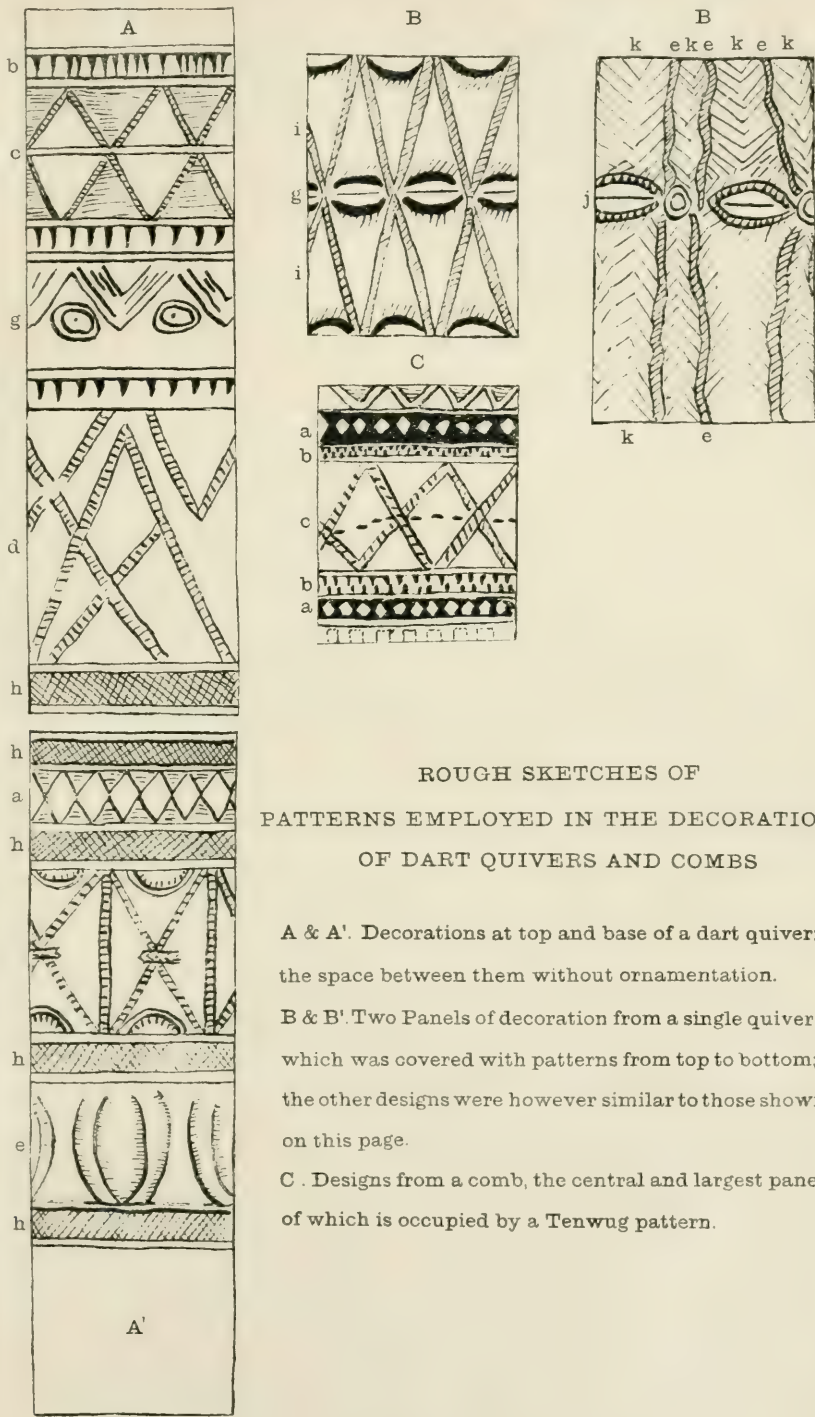
crossed over the chest are known as *tenwug manik*. The *tenwug* pattern is frequently found on the central panels of bamboo combs and it seems not at all unlikely that Vaughan Stevens, while intending to obtain the name of the central panel of the combs was merely told the name of the pattern which decorated the panel of the particular comb which he was studying at the time. Skeat's quotations from Vaughan Stevens' works do not, however, make it sufficiently clear whether these observations were made among the western or the eastern Semang (Pangan), and Skeat's quotations are the only medium by which the writer can at present obtain access to Vaughan Stevens' works.*

At least one man denied that the dart-quiver patterns had any magical meaning, but another told the writer that the pattern helped them to obtain food in the jungle. With regard to the quivers it is probably true that they are supposed to have sympathetic magic powers since nearly all the designs represent articles of Semang diet, either animal or vegetable. A Lenggong Semang volunteered a statement that this was the case (*vide* Lenggong paper), so it is most probable that the same thing is also true for Ijok. One or two men informed the writer in reply to direct questions that the patterns of the combs had no use as charms, while a single individual on being rather hardly pressed would only say that perhaps the patterns were of use, as the women always wore the combs. It is possible that the patterns had formerly a magical use but that this has now been almost forgotten. Examples of designs taken from quivers are given on plate XVI and also a "tenwug" pattern from a comb. It will be noticed that the designs differ very little, if at all, from those in use at Lenggong, and that the method of producing many of them is typically Negrito, the outer skin of the bamboo being cut away around the patterns to form a dark coloured background, the patterns themselves thus standing out slightly in the original white outer skin of the plant.

AGRICULTURE.

At the time of the writer's visit the aborigines had no ground under cultivation, but one man said that he intended to open a small clearing. They were supposed to be at work preparing ataps for re-roofing the Ijok Mosque but as far as could be seen their labours did not seem to progress rapidly. The local Malays spoke very scornfully of the Semangs' agricultural operations saying that they were too lazy to undertake the troublesome business of burning the jungle, and that when occasionally they *did* overcome their natural indolence and had planted a little padi or other crop, they would probably leave the locality just before it became ripe and everything would be eaten by birds and monkeys.

* Most of the combs figured by Skeat after Vaughan Stevens are said to be eastern Negrito, but from where it is not stated.



ROUGH SKETCHES OF
PATTERNS EMPLOYED IN THE DECORATION
OF DART QUIVERS AND COMBS

A & A'. Decorations at top and base of a dart quiver; the space between them without ornamentation.

B & B'. Two Panels of decoration from a single quiver which was covered with patterns from top to bottom; the other designs were however similar to those shown on this page.

C. Designs from a comb, the central and largest panel of which is occupied by a Tenwug pattern.



TRIBAL NAME AND ORGANIZATION.

The aborigines of Ijok call themselves Menik (Gul which means People of the Marsh lands. (Gul, a marsh; menik, men. Baloh menik = many people). Information was also obtained at this place that the Lenggong Semang called themselves in their own dialect Sēmāk Blūm, people of the big (water), *i.e.*, the Perak River. (Sēmāk, people; blūm, big. Sēmāk lēbēh = many people.) Ong blum (Semang) = ayer besar (Malay) = flood (English). As at Lenggong each small group or tribe of Semang has an elderly man in charge of it, who seemed to occupy rather the position of the head of a family than that of a chief.

NAMES OF PATTERNS.

(PLATE XVI.)

- (a) Padi seed (Kembok bah)
- (b) Lotong monkeys teeth (Lemoin boi)
- (c) Tenwug
- (d) Flying-fox elbows (Kenjong kaweid)
- (e) Gourd seeds (Met labu)
- (f) Eyes of the Lotong monkey (Met basoh)
- (g) Eyes of the Kuwangkweit bird (Mat langkweitn)

This bird is known as the 'gembala rimau' or tiger's herdsman, and is said always to accompany a tiger.

- (h) Bracelets (Gélang, name obtained in Malay only)
- (i) *Tenwug* of the flower sheaths of the Jack-fruit (*Tenwug nangka*.)
- (j) Cucumber seeds (Biji timon, name obtained in Malay only)
- (k) Tortoise breast pattern
- (l) Snakes (Ular, name obtained in Malay only.)

LANGUAGE.

Since several vocabularies of the language spoken by the Semang of Ijok have already been taken, the writer thought it well, instead of simply checking other observer's lists, and possibly adding a few new words, to make some slight attempt to break new ground. With this purpose in view a number of short sentences in the dialects both of Lenggong and Ijok were obtained in order to illustrate to some extent the grammatical constructions employed. This will be found below with their equivalents in both Malay and English, the sentences in the former language, which is necessarily used as the medium for communicating with the aborigines, being given more with the idea of retaining the original form in which the questions were put than of showing any words which may have been borrowed from it by the aborigines or which have a common origin. It will be noted that the Semang of Ijok as well as the aborigines of Lenggong use numeral co-efficients, only instead of speaking of "Oxen

seven tail," as is done by the Malays, they say "Seven body oxen." The possessive pronouns follow the words with which they agree, as they do in good Malay.

English.	Malay.	Lengzong Dialect.	Ilok Dialect.
To go up country...	Pergi ulu ...	... Chīb dētēh...	... Chūg nūling
Come here...	... Mari sini ...	... Chīb dēnāh ...	... Pē bādīh ...
To go down stream	Pergi hilir ...	... Chīb dāyēh ...	... Chūg nūtok
Don't be frightened	Jangan takut	... Jēk kātūng	... Yinket intugn
To fell trees	... Tebong kayu	... Gēh nīhūk ...	... Tēbong n'hūk
Give (me) water	... Kasi ayer ...	... Ōg ong ...	... Āg bētayu
Give (me) food (i.e. rice)	Kasi makan	... Ōg nasi ingae	... Āg yēh chī
Heavy rain	... Hujan lebat	... Mī chēkel ...	... Hūjan lēbēt
Many fish	... Ikan banyak	... Lēbēh kāk ...	... Ikan bālōh
(I) don't want to go fishing	Ta mahu pergi panching	Injek kachib kēnāl	Yēh hendak mūchub kēnigbi
Don't be angry	... Jangan marah	... Jēk kachīk	... Yīn-kāt gāhāt
This fish is nice	... Ikan ini sedap	... Kak noh sēlēp	... Ikan n'sēdēp
(I) am frightened of tigers	(Sahya) takut hari-mau	Intugn kāmūn (possibly language)	Intugn teiok,
Very beautiful	... Chantek sangat	... Bēt lēloie ...	... Bērūt āmēd
This ox is better than that	Lembu ini lebeh baik daripada itu	Lēmū nāh bēt yēh ānīn	Bēhōd lēm bū ūtēh ūgh ūgh
Two (head of) oxen	Dua ekor lembu (lit, two tail oxen)	Nī kēnēk mōr lēmū ("mor" means body)	Bieh kēbōh lēmū ("keboh" means body)
(That) ox is very fat	Lembu (itu) ban-yak gemok	Lēmū ahudn leloie	Lembu mīn chah āmēd
About, approximately	Kira kira ...	... Bīchūkūb ...	... Yēh māchāy chāw
About, more or less (About a dollar)	Kurang lebeh (kurang lebeh sa' ringgit)	... Essen mēnāing	... Kānī bālōh
I hit his head	.. Sahya pukul kepala dia	Ikū tēb āw ānēn	kuie Yēh chōng kuie tekti
He hit my foot	... Dia pukul kaki sahya	Anen tebaw ikū	(A phrase was given, but it means, "I hit his foot," "Yeh chong chan tekti")

NAMES OF A FEW ARTICLES OF FOOD.

Tapioca	... Ubi kayu	... Hūbī	... Piang
Yam (an aroid)	... Keladi	... Gākū	... Tālis
Keledek	... Keledek	... Silāk	... Silāk
(A tuber of a convolvulus, <i>Convolvulus batatas</i> (?))			
The Rambutan fruit	Buah rambutan	... Boh tangoie	... Boh tangoie
(<i>Nephelium lappaceum</i>)			
The Durian fruit	Buah durian	... Boh pēnūg...	... Boh pēnīg

ADDITIONAL NOTES ON THE SEMANG PAYA OF IJOK,
SELAMA, PERAK.

By HERBERT C. ROBINSON AND C. BODEN KLOSS.

(PLATES XVII-XXV).

THE following notes taken by us on a visit to Ijok in March, 1909, refer to the same tribe, and indeed to practically the same individuals as those visited by Mr. Evans, forming the subject of the previous paper. Inasmuch as they are accompanied by a number of photographs and measurements and a fairly full vocabulary* we have thought it worth while to publish them, though a certain amount of material, dealing with primitive beliefs and psychology has unfortunately been mislaid.

I.—RANGE OF TRIBE.

The Negrito people forming the subject of the present notes are at the present day confined to a district stretching from Selama and the Krian river on the north to Batu Kurau on the south; eastward they are limited by the crest of the Larut range of mountains, which terminates in Gunung Bintang, a mountain over 6,000 feet in height, while westward they probably never cross the railway running into Province Wellesley or venture into Kedah.

In former days, as we were informed by their present headman, their range extended to Kuala Kurau and Kuala Larut on the sea coast and even so far south as Bruas but the destruction of jungle due to the advance of cultivation and the spread of population, Malay and foreign, now confines them to their present narrow limits.

To the north-west they are in contact with the Negritos of Kedah, centring in Sidin and Baling, the former of whom occasionally cross the Perak boundary at Ulu Selama while eastwards they are in more intimate relations with the closely allied tribe inhabiting, according to one of its members, the eastern slopes of the Larut range, down to the Perak river, from Kuala Kenering, south to Kota Tampin and Kuala Plus. With these latter they intermarry.

It seems evident that the Semang Paya are a tribe rapidly approaching extinction, and that the day is not far distant, when there will no longer be left any representatives of the primitive jungle dwellers, who formerly inhabited the extensive tract of country between the Perak river and the sea. It should be noted, however, that this is the first time that Negritos have been recorded south of Taiping and that the evidence, such as it is, is solely traditional.

* To appear in a subsequent number of the Museums Journal.

CONDITIONS.

Though maintaining a nominal independence we found the Semang of Ijok living in close contact with the Malays of the village, who formerly, by employing them to cultivate hill padi escaped the payment of rent to Government, aborigines being exempt from this form of taxation. Now, however, ladang cultivation is discouraged and the Semang is no longer an agriculturalist.

At the time of our visit their headquarters were situated in garden land belonging to a Malay who was not improbably their "gembala" or "herdsman" a term, commonly applied, in Semang districts, to Malays who possess influence, hereditary or acquired over these primitive folk, which influence it is needless to remark, is not altogether unprofitable to the possessor. Men and women entered the village at will and purchased at the Chinese shops, where we were credibly informed that a proportion of them had acquired or been persuaded to acquire a taste for opium. They certainly showed an appreciation of money though whether they were able to obtain full value for it is problematical.

We saw in all eleven people, five adult males, of whom one was elderly, three women, one of whom was aged and three children, but we are certain that a few others did not show themselves. The Tunku Mentri of Larut, who has held the office of Malay Magistrate of the district for some years, assured us that he was certain that the total population of Semangs in the Selama sub-district was less than fifty.*

HABITATIONS.

(PLATES XVIII AND XIX).

The village consisted of about seven "houses"; each house was merely a curved wind-break and roof combined made up of a light frame work of bamboos and sticks, supporting a thatch made of the fronds of the bertam palm (*Eugeissona tristis*), sheltering a floor space of some six feet by four on which was a rude platform very slightly raised made of the mid-ribs of the same palm. In two or three instances these latter were merely laid on the ground. The huts were in no sequence or order and faced in no particular direction. There was no regular fire-place and cooking operations were conducted anywhere over a fire made of a few branches or smouldering logs. The ground was littered with palm pinnæ, wood shavings and broken bamboo, the debris of matwork and basketry in process of manufacture.

* As regards the numbers of this tribe the third decennial census of the Federated Malay States taken on the night of the 10th March, 1911, records 37 persons as inhabiting the Selama districts. Of these, 22 were adult, 10 males and 12 females; and 15 children, 9 males and 6 females.

These houses were built by the women on account of a superstition that exists to the effect that if any portion of the camp is built by men the party living in it would be eaten by tigers. *

PHYSICAL CHARACTERS.

Dealing with the physical characters of these people the colour of the skin, was found to be intermediate between shades 3-4 of Broca as given in the "Notes and Queries on Anthropology" published by the British Association in 1899, which at the moment was the only scale to hand, though it is well to note that in the Indo-Malayan region this scale is not sufficiently extensive to be of much comparative value. In short the skin, though varying widely between the two tints, neither of which it resembled, might be described as essentially rufous chocolate, without any lustre or oily appearance.

The colour on the whole body was very uniform but in two instances was much bleached by an aggravated form of kurap (*Tinea* sp.), to which these people, owing to their mode of life, are especially liable.

The hair, always a difficult character to describe, was dull black in colour, not coarse in texture, but somewhat wiry. On the whole it grew evenly over the scalp and it was difficult to detect any trace of the peppercorn appearance characteristic of the true Andamanese Negrito. It may be described as woolly or in cases where it had not been recently shaved as fuzzy. The hair of the children was worn longer than that of the adults and resembled the wool on the back of a sheep.

In some cases it was evidently shaved periodically over the whole of the scalp (pl. xvii, third figure from left; pl. xx, right hand figure) which in others (pl. xvii, fourth figure from left; pl. xx, left hand figure) a narrow brow fillet about two inches wide extended from ear to ear. The two women we saw, one of whom was nearly nubile but unmarried, had a lock of hair an inch or two longer than the rest on the back of the crown.

The headman wore a slightly frizzly beard and one or two others had indications of a moustache. Body hair including the axillary and public regions and the lower limbs was scanty, the rest of the body was practically glabrous.

The eyes were the rich dark brown that is conventionally described as black, the sclerotic was slightly stained yellow, the plane of the eyelids was horizontal; in only two instances was there the slightest trace of an epicanthus: the eyelashes were particularly long and fine.

* With further regard to the sexes we found that this party also maintained a custom which forbade father-in-law and daughter-in-law to communicate directly with each other.

The nose was especially broad, concave and flattened, the nostrils being visible from above, except in one or two instances in which the tip was depressed and flattened forming a hook.

The lips were not particularly thick nor were they much everted. Prognathism was only slightly indicated. The cheek bones were only moderately prominent and the contour of the face was shield-shaped; superciliary and other ridges were not in evidence and the whole cranium appeared like that of the majority of these tribes to be of infantile type. The chin was somewhat pointed and the jaw though small was powerfully formed at the angles, the muscles being well developed. Teeth were white and regular. The ears were small, flat and without lobes. The forehead was narrow and rounded and the skull ill-filled.

The general expression was not vivacious, appearing to us hardly that of a people dependent on their alertness for the means of subsistence.

The hands were small, the fingers delicate and tapering, the feet were turned out when walking but the great toe was quite in line with the inner side of the foot, being in no way deflected.

DRESS AND ADORNMENT.

The dress of the males was a cotton or bark-cloth T-bandage, the end being brought up beneath a rattan girdle and dependent in front; that of the women consisted of two skirts, one being composed of one foot lengths of the rhizomorph of a fungus (*akar batu*) knotted by a clove hitch to a double length of cord of doubtful origin forming a fringe about three feet long which was found round the waist. The second skirt was of similar form but of greater depth and less exiguous being made of shredded grass and vegetable fibre, bunched over the hips. Both sexes wore bracelets and necklet of the same *akar batu* as that composing the women's skirts, plaited rattan bracelets and, for state occasions, ornaments of beads of various colours strung with the teeth of monkeys and worn either as fillets or necklets. The men also wore pandan leaf fillets ornamented with scarlet flowers with a long projecting plume at the back of the same material. The ears were not perforated and no ear-rings were seen but the septum of the nose was pierced for the reception of a porcupine quill or other similar ornament. Large bunches of white flowers were worn by the women on one occasion at the back of the head. Ornamented bamboo combs were also in use by the women but were not abundant and were parted with reluctantly.

WEAPONS.

We have little to add to Mr. Evans' description of the weapons but it may be mentioned that bamboo spears, with the points hardened by the fire are in use for hunting, while the bow and arrow though not actually used at the present day by the Ijok Semang are not unknown to them.



C. B. Klass, Photo.

SEWANG OF LIOK, SELAMA DISTRICT, PERAK.

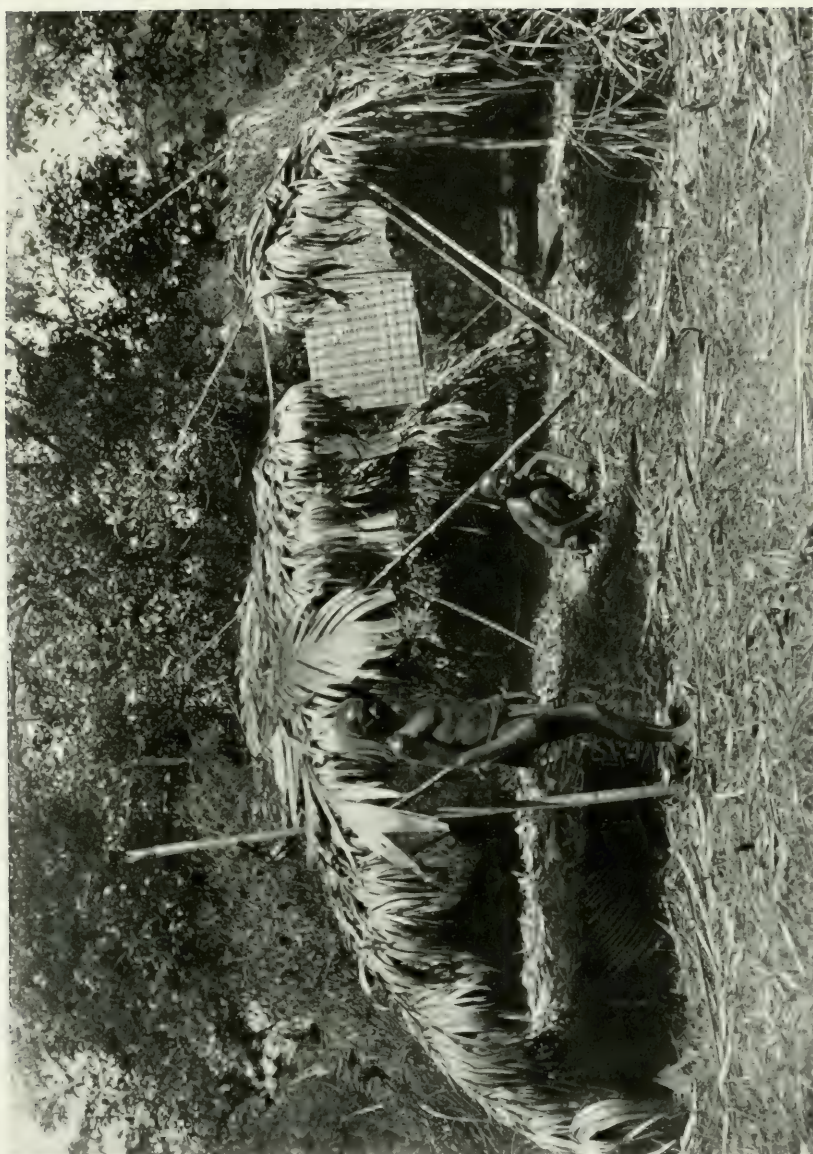




C. B. Kloss, Photo.

SEMANG OF LOK, SELAMA DISTRICT, PERAK, SHOWING HOUSES.





C. B. Kloss, Photo.

HOUSES OF SEMANG, LOK, SELAMA DISTRICT, PERAK.



H. C. Robinson, Photo.

SEMANG OF IJOK, SELAMA DISTRICT, PERAK.



H. C. Robinson, Photo.

SEMANG OF IJOK, SELAMA DISTRICT, PERAK.



H. C. Robinson, Photo

SEMANG OF IJOK, SELAMA DISTRICT, PERAK.





C. B. Kloss, Photo.

SEMANG OF IJOK, SELAMA DISTRICT, PERAK.





SEMANG OF LUOK, SELAMA DISTRICT, PERAK.

C. B. Kloss, Photo.



H. C. Robinson, Photo.

IPOH POISON TREE (*Antiaris toxicaria*) SHOWING TAPPING CUTS.



H. C. Robinson, Photo.

IPOH POISON TREE (*Antiaris toxicaria*) SHOWING TAPPING CUTS.

The only poison in use is *ipoh* (*antiaris toxicaria*). *Brual*, which derives its potency from an alkaloid allied to or identical with strychnine, being apparently unknown to them.

The photograph of an exceptionally large *ipoh* tree in the jungle near Ijok, which must have been in use for several generations is reproduced on plate xxv.

During our stay we were able to verify the fact that *ipoh* is not effective against domestic poultry. A considerable quantity was applied to a wound on the thigh of an old rooster and though the bird looked uncomfortable for two or three hours it recovered completely and was later eaten without ill effects by our Malay boys.

The local Semang, as do other aborigines of the Peninsula, assert that *ipoh* is without effect on ground game and poultry whereas *brual* has a toxic effect on everything wounded by an arrow charged with it. *Ipoh* loses its effect very quickly when kept long and especially when exposed to damp but the poison used on this occasion was quite freshly prepared.

MEASUREMENT OF "SEMANG" TAKEN AT IJOK, SELAMA, PERAK.

Number	...	...	1	2	3	4	5	6
Age	...	...	± 30	± 25	± 40	± 25	± 20	± 30
Character of hair	...	...	very woolly	shaved	grey curly	very woolly	woolly	shaved
Epicanthus	...	...	absent	absent	absent	absent	slight	slight

MEASUREMENTS IN MILLIMETRES.

Stature	...	...	1474	1582	1490	1547	1618	1640
Length of head	...	...	178	174	186	183	176	190
Breadth of head	...	...	138	140	141	141	138	148
Length of face	...	...	101	119	107	101	117	117
Breadth of face	...	...	134	137	143	129	130	139
Circumference of chest	...	...	857	873	795	780	797	815
Length of nose	...	...	38	41	42	36	44	45
Breadth of nose	...	...	45.5	39	46	39	42	47.5

INDICES.

Cephalic index	...	...	77.5	80.5	75.8	77.1	78.4	77.9
Facial index	...	...	75.8	86.9	74.8	78.5	90.0	84.2
Nasal index	...	...	120	95.1	109.5	101.3	95.5	105.5

Nos. 1, 2 and 3 are pure bred, Ijok Semang. No. 4 was a half bred between a Lenggong man and an Ijok mother. Nos. 5 and 6 were Lenggong "Sakai."

NOTES ON SOME ABORIGINAL TRIBES OF PAHANG.

BY IVOR H. N. EVANS, B.A., ASSISTANT CURATOR AND ETHNOGRAPHICAL ASSISTANT, F.M.S. MUSEUMS.

(PLATES XXVI-XXXVIII).

THE following short papers are the results of a month's work in Pahang carried out in September and October, 1913. Three parties of Jakun-like people* were met with as well as two small divisions of Pangan (eastern Negritos). Kuala Tembeling was the point from which various expeditions were made, short visits being paid to the Cheka river, the Tekai river and the mouth of the Retang.

The Jelai or Pahang, the largest river in the country, is known by the former name above Kuala Tembeling, where a small stream called the Pahang joins it, and by the latter below this point, though actually the Jelai and the Pahang are one, the stream which gives the river its name in its lower reaches being merely a small tributary.† The Cheka joins the main stream on its right bank not far above Kuala Tembeling, and the Retang just below Kuala Tembeling on its left bank. The Tekai is a tributary of the Tembeling. The Tembeling enters the Jelai at Kuala Tembeling as the name shows (Kuala, river mouth).

The two divisions of Pangans were living on the Cheka, one about its head-waters and the other not far from its mouth. Of the Jakun, sections of two tribes had settled close together on the Tekai, and a portion of another near the mouth of the Retang. There has evidently been a great re-shuffling of tribes in this part of Pahang, and attention is drawn to the recent wanderings of the Tekai and Retang aborigines in the sections dealing with these peoples. In the small district of Pahang under review we have the Jakun tribes of the Tembeling living some miles to the north of the Cheka Pangan, whereas properly the Pangan country, comprising very roughly the eastern Siamese States of the Peninsula, Trengganu, Kelantan and N.E. Pahang, lies north of that inhabited by Sakai and Jakun tribes, except along the line of the main mountain range of the Peninsula to the west, which forms a rough boundary between Jakun, Sakai, and Semang and the eastern Negritos (Pangan). In the district with which these papers deal Sakai and Pangan and Jakun meet and overlap, if not fuse.

* These Jakun-like people, have probably a small admixture of Sakai blood, and speak Sakai dialects. In this paper, for the sake of convenience, they are elsewhere referred to as Jakun.

† For further reference to this Malay method of naming rivers see "Kelantan, a State of the Malay Peninsula" by W. A. Graham (Page 8).

THE PANGAN OF THE CHEKA RIVER, PAHANG.

(PLATES XXVI-XXX, XXXVII AND XXXVIII).

The two divisions of the Pangan met with on the Cheka are settled as compared with those of many of the rivers of Pahang, which are said rarely to come in contact even with the Malays. Each group is under the control of a Malay, whom they look upon as their master and protector. The Malay on his side no doubt makes a very good thing out of the pact, sending the Pangan off into the jungle to collect large quantities of rattans and other produce for him, and supplying them in return with rice, tobacco, and occasionally with a little cloth. The Malay who controls the Pangan in the Ulu (head-waters of the) Cheka is a Sumatran named Man, who has married a local Malay woman, it being through his wife that he has obtained his power over the people. The Pangan of the Kuala (mouth of the) Cheka are also "owned" by a Sumatran Malay, a Kampar man, named Pakeh, who is a son-in-law of the local Penghulu or village headman. The writer was unfortunately only able to meet these groups of Pangan for a short time, altogether parts of four days, as in both cases their Malay master was impatient for them to go in search of jungle produce, and only kept them back for a couple of days by special request.

TRIBAL NAME AND ORGANIZATION.

The tribal name of the Cheka Pangan, and that by which they like to be called, appears to be Battek, which in their own language simply means "men." In dealing with people in a low state of civilization there is generally a difficulty in getting them to grasp abstract ideas, and it is always quite possible that no true tribal name may exist apart from that given by a race in a more advanced state. Many of the aboriginal tribes of the Peninsula, as the Cheka people, simply call themselves "men" (Senoi, Menik Semak, etc.), or, if they can give more details, describe themselves as, "men of the marshes," (menik gul), men of the river reaches, (menik rantau), men of the big river (semak blum), etc. After all from what are many of our European national names derived if not from some such simple beginnings, *e.g.* Saxons, men who wear the Seaxe, Cymri said to mean comrades, French (Frank) probably meaning free? The Cheka people repudiated absolutely the name of Pangan, which they gave the writer to understand denoted a low, black, jungle-living, root-eating kind of a person quite different from themselves. Pangan in the sense of being eastern Negritos they however undoubtedly were, but they had progressed in so far that they had to a certain extent abandoned their wandering life and had taken slightly to agriculture. Pangan too was the usual term used by the local Malays* in speaking of the Cheka aborigines among

* The Pangan name for the Malays is Gup.

themselves, but when addressing an aboriginal they substituted *Battek* for the former term. As has been remarked in another paper, all the jungle tribes dislike having such terms as *Sakai*, *Semang*, etc., applied to them, which they know the Malays use in a slighting sense, but are pleased if called by some other name to which no stigma is attached.

The name applied by the Malays to each small division of *Pangan* is "puwak"; according to Wilkinson meaning a troop, an assembly, or the family in the widest sense. The Malays in using the term will speak of "Pachet's puwak," or say that there is a "puwak" of *Pangan* living on such and such a river. Probably the word is used in the family sense as each party seems to be little more than a family of which one or two of the elder men are in charge. There appears, however, to be some slight bond between different "puwaks" related by blood or language, which unites them into a very loosely knit tribe. The *Cheka Pangan* call their elders by certain names which they have probably partly got from the Malays, who often give aboriginals high sounding titles in fun, these being generally used by the recipient in all seriousness. If not obtained from the Malays the titles have been adopted from some *Sakai* or *Jakun* tribe, most likely the latter (*Batin*, *see* below, being a *Jakun* title) with whom they have been in contact at some fairly recent date. The full list of *Pangan* dignitaries, according to the *Kuala Cheka* people, runs in order as follows *Batin*, *Rajah*, *Penggghulu*, *Pemangku*. The *Rajah*-ship is at present in abeyance, the former occupant of the office, who lived in the *Ulu Cheka*, having died recently. The *Batin* and the *Pemangku* are with the *Kuala Cheka* division of the tribe. The writer was told that there was another "puwak" of *Pangan*, who were apparently part of the same loosely organized tribe, living on the *Krau* river with the local *Sakai*. Titles are said to descend in the male line, *i.e.*, to the eldest son of the deceased officer.

HABITATIONS.

As has been already remarked, the *Pangan* of the *Cheka* river have made some little advance in civilization owing to having partly given up their roving habits. The only settlement visited was that of the *Ulu Cheka* group. This was reached after about half an hour's walk from the Malay village of *Kampong Ulu Cheka*, and consisted of three huts standing in quite an extensive clearing. The most interesting feature about these was that they were not raised from the ground. The houses of the Malay, the *Jakun* and the *Sakai* are almost invariably pile dwellings of the usual type found throughout the Indo-Chinese and Indonesian regions.

Even *Sakai* and *Jakun* huts occupied perhaps only for a couple of months are generally of this type. The *Negrito* inhabitants of the Peninsula, who are typically a nomad people, build either beehive huts of palm leaves or small wind shelters of the same materials, the

only other type of artificial* dwelling recorded being tree-shelters. The Pangan of the Ulu Cheka have, therefore, even when they have advanced far enough to build a dwelling which may be dignified by the name of a house, clung to the old Negrito plan of building on the ground and have not adopted the pile-dwelling type of house of their Malay and Sakai neighbours. Each house consisted of a single room and, apart from the fact that there was no kitchen (*dapor*) or inner room and that it was built on the ground, the Pangan dwelling in its shape, method of construction, and materials was not unlike that of the poorer class of Pahang Malay. The walls were made of sheets of bark of the *kepong* tree stretched over the framework of the house while the roof was thatched with leaves of the *chuchoh* palm. In one hut visited, which will serve as an example of the others, there was a space of bare earth reaching from the door to the wall at the back, and occupying about one-third of the floor space: in the middle of this a fire was burning, which was made of small logs placed radially. The rest of the earth floor was covered in by a sleeping platform of split bamboo raised about six inches from the ground on a rude framework of saplings or small branches. On the platform were lying a few pandanus mats, not unskilfully made, but without any ornamentation. Several broken pieces of blow-pipes and one whole specimen were stored under the platform. Various household utensils such as water-gourds, and cooking pots, the latter bought from Malay or Chinese traders, were ranged along the wall at the back of the hut and in one corner were a couple of large meshed carrying baskets of *bemban*. At the time of the writer's visit there were only four men and a woman with a baby in the settlement, the other inhabitants, women and children, having gone off into the jungle to dig for roots.

No opportunity of visiting the settlement near Kuala Cheka presented itself, but they said that they also had a clearing and from their description their houses seemed to be of the same type as those of the Ulu Cheka people.

DRESS AND ADORNMENT.

The Pangan men all wore T-bandage loin-cloths of native bark cloth or of European cotton stuff, supported by a string of vegetable fibre or split rattan tied round the waist. Above this a long cord, made either of the plaited rhizomorphs of a fungus called *akar batu* or of the plaited fibres of a palm, was wound several times tightly round the body with its ends tied together. This cord was often used for holding a sheathless parang or working knife, which thus hung with its naked blade against the thigh and buttocks. Necklaces and bracelets of several single strands of *akar batu* were common, the former being tied in front so as to leave an end depending. Other than these the men were wearing no ornaments. The women

* Rock shelters are often made use of.

usually made some attempt at decorating themselves; their dress consisted of a very scanty T-bandage loin-cloth of *tërap* (*artocarpus kunstleri*) or *ipoh* (*antiaris toxicaria*) bark held in position by a string of vegetable fibre wound many times around the waist; above this one or two of them wore an ornament made from a single strip of rattan cane coiled several times round the body, the two ends of the coil being tied together. These strips of rattan were decorated with neatly scratched-in patterns ornamented with burnt-in dots (plate xxxvii). Bamboo combs were rare, but two examples were obtained, one a large and rather new specimen (length 12.5 cms. breadth 6.5 cms.) decorated with some very roughly scratched-in patterns which were said to represent jungle flowers; the other older and smaller (length 8.5 cms., breadth 4.5 cms.), the patterns on it being chiefly of the type known to Malays as "puchok rebong"—bamboo sprouts. Studs of rolled up *palas* leaves were noticed in the ears of an unmarried girl and a married woman was seen wearing a bamboo comb and several flowers of the *sendudok* (*Melastoma polyanthum*) in her hair.

With regard to hair dressing the different types can be well seen in the accompanying illustrations. The men often shave the head entirely, partly in order to rid themselves of parasites, partly owing to the trouble of dressing their densely matted hair, and probably also in order that the Malays shall not be able to tease them about having woolly heads. With their fondness for shaving or cutting the hair very short it is difficult to obtain any idea as to what length the hair would grow if not interfered with. The married woman in the centre of plate xxix (upper figure) is not typical and it would therefore be unfair to theorize upon the length of her hair. The other two unmarried girls in the same picture have their hair cut fairly short. The married woman seen in the Ulu Cheka had hair reaching only to the base of the neck. Probably typical Negrito hair if left uncut would only grow long enough to form a large woolly mop.

WEAPONS.

Apart from two old Tower muskets seen in the house of one of the Ulu Cheka Pangan, the only weapons in use appeared to be blow-pipes and even these were comparatively rare, each man, as a rule, only possessing a single specimen. The reason for this was, the Pangan said, that bamboos with a length between the joints sufficient for making blow-pipes were very difficult to get locally. The most prized weapons they owned were those obtained from other aboriginal tribes, especially from the aborigines who live in the hilly country at the source of the river Jelai, probably a Sakai tribe, who, living in a mountainous district, are able to obtain long-jointed bamboos. The Pangan thus value their blow-pipes very highly, one man saying that

his had belonged to his father before him, and it was an heirloom. A few locally made blow-pipes were however seen: these were much clumsier than those made by the hill people. In general design they resembled the usual type found in Selangor, Negri Sembilan and N. E. Pahang, having a conical wooden mouth-piece and a lashing of rattan binding around the distal end of the outer tube. The bamboo of this tube was split longitudinally all round into a number of thin strips by cutting out long wedge-shaped pieces, the broader ends of the wedges lying towards the muzzle. The strips of bamboo into which the muzzle of the outer tube was thus divided were drawn together again into cylindrical form, this necessarily leaving the muzzle with a diameter considerably less than that of the rest of the tube. To keep the strips together they were lapped round with the rattan binding mentioned above, which is covered over with some kind of gum or resin, that most generally used being "gettah malau" or "ambalau."

The purpose of treating the end of the outer bamboo in this manner is to give it a good grip on the inner tube. Pangan statements as to the difficulty of obtaining suitable bamboos for making blow-pipes were supported by two peculiarities in the outer or covering tube of most of the locally made specimens, one being that the weapons were rather clumsy since the bamboos used for the outer tubes were considerably larger than those generally employed by the jungle tribes of Selangor or Negri Sembilan; the other that each outer tube was made in two sections, and consisted of a long proximal joint, a whole internode, into which a shorter piece was fitted to form the distal or muzzle section. These two pieces were joined by shaving down one end of the bamboo which was to form the muzzle section for a length of about seven cms. and then pushing this portion into the distal section, the joint being strengthened by a binding of rattan around the end of the enclosing bamboo. Other aboriginal tribes generally use either a single long internode to form the outer tube or else cut two internodes with their connecting node, and poke out the septum to allow the passage of the inner tube: the remaining thickened ring from which the septum arose helping to keep the inner tube in position. There are, however, several specimens of blow-pipes in the Perak Museum in which the outer tube is composed of two pieces, these mostly being from the Slim district of Batang Padang, and it is noticeable that in all these the proximal section is made from a rather large bamboo and the distal from one which is a good deal smaller. These remarks also hold good for the Pangan blow-pipes, and it seems likely that the reason for making the outer tube in two pieces is that certain tribes have adopted rather a different method of insuring the rigidity of the inner tube, this probably again being owing to the local distribution of different species of bamboo. For this purpose the Upper Perak people rely

on a tightly fitting outer tube made from a single internode; the tribes who use outer tubes composed of two internodes and their intervening node on the support afforded by the narrow muzzle, the remains of the node on the inside of the outer tube, the covering section of the inner tube joint, which touches the inner wall of the outer tube, and the attachment of the mouth-piece which is affixed to the inner tube end and fits closely into the outer; whereas the users of two-piece outer tubes have the inner tube supported at the junction of the mouth-piece, and along the whole length of the small distal section of the outer tube. With regard to the inner tube of the Cheka type of blow-pipe it has no peculiarities calling for notice beyond the fact that its proximal section is rather short which brings the covering section of the bamboo over the joint well down within the larger portion of the outer tube, without touching it.

The Pangan dart-quiver of the Cheka river is of rather an intermediate type. The only specimen obtained, which was purchased from the Ulu Cheka people, is a good example. It is a plain bamboo receptacle 39 cms. high with a cover of soft plaited pandanus, the top of which is slightly convex and rises near its edge into four very slightly marked points. This is rather reminiscent of the type of cover found on many of the quivers belonging to what Skeat calls the Kuantan type of blow-pipe, (*see* blow-pipe and quiver described below on p. 210). The Cheka quiver is rather taller than those of the ordinary Selangor type and contains extremely long darts, exceeding in length those from any aboriginal tribe in the Perak Museum collection, their length being on average 33 cms. The standard for measuring blow-pipe darts according to the Ulu Cheka people is from the maker's elbow to the bottom joint of his little finger. The Pangan of Ulu Aring, Kelantan, as Skeat tells us, also use this standard as well as another, the length of the foot. The tops of several dart heads in the quiver are marked with a black cross, which the Pangans said was merely made for ornament. The poisoned darts of which there are only three in the quiver are all unmarked, and of the unpoisoned ones some have the marking, and others not. In a few cases the base of the conical dart-head has also been blackened to a height of about a third of an inch. The poison used on the darts was said to be made from *ipoh* (*antiaris toxicaria*), *ipoh akar* (*strychnos* sp.?), *bangkong tikus* (?) and other vegetable substances.

MUSICAL INSTRUMENTS.

Only a single musical instrument was obtained from the Pangan, this being a simple two stringed zither of the kind known to the Malays as "gendang batak." It consists of two fine strings made from a single length of liana stretched longitudinally on an internode of bamboo. The upper points of attachment of the strings (*i.e.*, the ends of the length of liana) are bound several times round the body

of the instrument and are finished off in two ornamental scroll-knots. At the lower point of attachment where the cord is folded backwards, the strings are kept in position by a small wooden cross-piece, held by a loop knot, the cross piece resting against the edge of the bamboo internode. An excellent illustration of the same type of instrument will be found in Messrs Annandale and Robinson's *Fasciculi Malayenses* (*Anthropology*, Part II, (a), plate xxi, c 24). The only difference between this and the Pangan specimen being the method of fastening the strings at the base of the instrument.

The Pangan told the writer that musical entertainments were only indulged in during the fruit season, and consequently at other times of year they had few musical instruments in their houses, those from the previous season having been broken or thrown away.

OTHER MANUFACTURES.

Other than the blow-pipes, quivers, bark-cloth, combs and carrying baskets already mentioned the Pangan seemed to have very few articles of their own manufacture. Small pandanus pouches for holding sireh leaf and betel nut were in general use, and two curious tocacco boxes made from the shell of the *terua* or *kulim* (*Sorodocarpus borneensis*) fruit were also seen. These were formed by boring a round hole in the lower end of the shell at either side and polishing the outside, the septum in the interior being complete. An unusual type of wooden mortar, used for pounding up food stuff, was bought in the Ulu Cheka. It was cut from a solid block of wood and its body much resembled that of the mortars used by the Semang of Perak. The peculiarity about it was that its base tapered into a spike seven cms. long. This enabled the utensil to be fixed firmly in the ground when required for use. Small wooden stirrers, such as the Malays call *sudit*, were seen in the Ulu Cheka and were used in cooking rice. A heavy palm-wood* club or mallet, 28 cms. long, used for beating out bark-cloth was purchased in the Ulu Cheka. The head of this was flattened on either side, but one side, that used in making the cloth, was cross-hatched with fairly deep cuts which divided up the surface into small and rather irregular rectangular sections. Gourds for holding water were in general use but presented no special features.

AGRICULTURE AND FOOD SUPPLY.

As noted above, the Pangan have made some little progress in the arts of agriculture. The houses of the Ulu Cheka people were situated in a wide jungle clearing planted with Indian corn. At the time of the writer's visit they were living partly on such food as

* Made from the wood of the *bayas* palm.

they could obtain from their Malay protector in return for jungle produce, and partly on tubers which they dug up in the jungle and roasted in the ashes of their fires. The corn crop was just beginning to ripen so they were only able to pick a few heads from it each day. They probably added to the menu by shooting animals and birds with their blow-pipes. Fish are easy to obtain in the Cheka river, either by means of traps or with rod and line.

PHYSICAL CHARACTERISTICS AND MEASUREMENTS.

With regard to the aborigines of the Ulu Cheka, the four men and one woman seen might all be said to be fairly typical Negritos. The skin colour was dark brown to black and the hair woolly and of the sooty dry-looking colour commonly found among the Perak Semang. Three of the men very much resembled in facial appearance the Pangan of the Ulu Aring, Kelantan, of whom a picture is given in Skeat's *Pagan Races* (Vol. II, p. 777): the fourth man, Pachet the leader of the party, had a rather childish facial expression,* like that to be so often seen in the Semang. Among the Kuala Cheka people it was noticeable that some of the younger members of the party were much less typical than their elders, for instance the young man, the second from the left in plate xxvii has hair which is as straight as that of the average Malay, while that of the other three members of the group is more or less typical. The woman who is the central figure in plate xxix (upper figure) is again not typical, the hair being rather wavy than frizzly and the skin comparatively light: her whole appearance being in fact rather Sakai than Negrito. On the other hand the little girl on the left of the same picture, besides having rather typical hair, had a skin almost as black as that of a West African negress, this character being well shown in plate xxvi where she appears again. The other woman of the three photographed was fairly true to Negrito type, having frizzly hair, a dark brown skin, and a rather infantile type of face. The man shown in plate xxx had the most truly Negrito hair seen among the Cheka Pangan, each curl being tightly wound into a little ball, the hair formation differing only from that of a South African Bushman in the lesser extent of skin visible between each curl. This is best shown in the right hand figure. The writer paid a second visit to Kuala Cheka after leaving the Tekai in order to make sure of getting some fairly clear photographs, as those obtained on the first occasion when he met the Kuala Cheka Pangan had been taken under bad weather conditions: unfortunately, however, this man had shaved his head in the interval. The Batin, who was in charge of the Kuala Cheka Pangan, had a small chin-tuft beard, as had also Songsong an Ulu Cheka man.

* The photographs taken in the Ulu Cheka unfortunately did not turn out well enough to reproduce.

HEAD MEASUREMENTS.

These were all taken from Adult Males.

Locality.	Length of head. mm.	Breadth of head. mm.	Cephalic Index.	Remarks.
(1) Kuala Cheka	186	138	74.1	
(2) "	184	136	73.9	
(3) "	176	137	77.77	
(4) Ulu Cheka	176	137	77.77	Man named Yes
(5) "	184	144	78.2	Man named Pachet
(6) "	171	140	81.8	Man named Songsong
(7) "	181	140	77.9	Man named Wül

The average cephalic index of the seven individuals measured is therefore 77.2, ranging from 73.9-81.8.

It is scarcely fair to base any conclusions on so small a series of measurements, but, in so far as they go, they show considerable variety, two of the Kuala Cheka men being dolichocephals (cephalic indices below 75), one of the Kuala Cheka men and one from the Ulu Cheka, just within the sub-dolichocephalic division (cephalic indices 77.77 to 75), two Ulu Cheka men mesaticephals (cephalic indices 77.78 to 80), and one Ulu Cheka man a sub-brachycephal (cephalic indices 80.01 to 83.33). Typically the Pangans should be mesaticephals or sub-brachycephals, and even on the showing of this table the Cheka people are not far below the mesaticephalic line. Probably there is a slight admixture of other blood (Sakai, Malay or Jakun) in the tribe, but this only crops up here and there among them, showing itself in a few individuals in the straight or wavy character of the hair or, if Sakai blood be present, in a tendency to dolichocephaly.

FACE PAINTING AND TATTOOING.*

Tattooing was common among both sections of the Pangans and was found on the faces of both males and females. Face painting, which was done with a black pigment made from "gettah prah,"† the sap of a tree, was only noticed on the faces of the Kuala Cheka women, but is no doubt also practised by the Ulu Cheka people. The face paint designs as shown in plate xxxviii, figure 1, are not very clear in the photograph, (plate xxix, upper figure). The tattooing consisted as a rule of large blue-black dots or round marks as large as the tips of the fingers, the most common form of ornamentation, both in men and women, being a line of them running round the face, taking in the chin, the sides of the face in front of the ears, the

* Tattoo marks do not show in any of the photographs.

† The prah tree is said by Wilkinson to be either *Mezzetia leptopoda* or *Elataeriospermum tapos*.

temples, and the forehead just above the eyebrows. A rather more complicated design was seen on the face of Pachet the head-man of the Ulu Cheka Pangan, (plate xxxviii, figure 2). Several individuals had only a few dots on the sides of the face or on the forehead. All the Pangan questioned were unanimous in saying that the art of tattooing was one which had been known for many generations. With regard to its use they said that it was done merely for decoration, but one man further asserted that it was a good remedy for headache. It is rather curious that the Pangan should have taken to tattooing as tattoo marks do not show up at all clearly on their dark skins, it being necessary in one case to inspect a man's face at very close quarters before it was possible to make out how the pattern was arranged. In no instance was tattooing seen on any of the Sakai of the neighbouring rivers, though it would show up extremely well on their much fairer skins.

Dark races do not as a rule tattoo, but instead make patterns on their bodies by cutting designs in the flesh and rubbing in earth or mineral substances, raised scars termed keloids resulting from the operation. The Tamils are, however, a notable exception to this rule.

The Pangan said that the pigment used in tattooing was soot produced by burning damar gum, and one of the Ulu Cheka men also stated that before use it was mixed with a little human milk. The implement at present used in tattooing is the ordinary European-made needle.

EAR BORING, NOSE PIERCING AND TOOTH FILING.

All the women and girls who had reached the age of puberty had both ears pierced. The most common objects used as ear-rings were small pearl or bone shirt-buttons obtained from Malay traders, these being worn against the front of the lobe and secured by a string passing through the hole. Occasionally a native cigarette was carried in the lobe of the ear. Ear studs of rolled "Pallas" leaves have been mentioned in a previous section. In no case was piercing of the nose septum observed, although it was said that the wilder Pangan tribes practised this form of mutilation. Tooth filing was stated not to be obligatory, but several men had the six front teeth in the upper jaw rubbed down.

RELIGION, SUPERSTITIONS AND TABUS, ETC.

With regard to religion and belief in an after life the writer could obtain nothing but negative information, though it would appear that, apart from the bird-soul theory set forth below, the Pangan must have some idea that the spirits of men live on after death, since the Kuala Cheka people stated that food, water, and the dead person's belongings are placed on the grave.

With regard to the bird-soul Vaughan Stevens has put on record a good deal of information obtained by him from the Pangan and judging by what the Pangan of Kuala Cheka told the writer his (V. S's) observations would appear to be correct.

THE PANGAN BIRD-SOUL.

The following are the statements about the bird soul obtained from the people of Kuala Cheka.

"The soul of every Pangan is a green bird of the kind called Biau, which has a long beak and feeds on fruit and insects.* The Biau has two cries, one Kah-Kah-Kah, the other Tutoh buah (gorge fruit). When a woman is pregnant and hears one of these birds in the jungle, she knows that the soul of her child has arrived. When a man dies, his soul leaves him in the form of a bird. If anyone catches a Biau bird a great thunder storm will occur."

Apparently a man's soul can leave his body during life in the shape of a Biau bird, for the Pangan said that when they hear one of these birds they know that a friend is coming to see them, and they start calling out the names of people they know until the bird is silent. The last name mentioned before the bird ceases crying is that of the visitor who is coming.

THE ECLIPSE OF THE MOON.

The Pangan seemed to be altogether without explanations of the majority of natural phenomena, but as is the case with all savage tribes they had an explanation of the eclipse of the moon, a thing which, according to the ideas of a primitive people, lies altogether outside the course of Nature. The lunar eclipse, which they call "jekob hilug," † "snake swallow," is said to be caused, as its name denotes, by some gigantic snake trying to swallow the moon.

TABUS.

The Pangan of the Ulu Cheka informed the writer that it was tabu for a man or woman to mention the name of their father-in-law or mother-in-law and that they must not pass in front of either of them. Both father-in-law and mother-in-law may be addressed, but they must be spoken to with respect.

PERSONAL NAMES.

The Pangan of the Ulu Cheka said that a child, whether male or female, was named from the river or stream nearest the place at which it was born. The four men in the settlement, Pachet, Wul, Songsong, and Yes were all said to have received their names from local streams or small rivers. The Kuala Cheka Pangan confirmed the statements made by the other division, giving two men's names as examples, Geh, and Saboie (or Choie), both of which they said were also the names of rivers.

MARRIAGE.

Marriages among the Cheka Pangan were stated to take place at the durian fruit season, and it was also said that there was no marriage ceremony except a feast; very possibly however the latter information is incorrect. The Ulu Cheka people said that marriages

* A species of Bee-eater. (*Nyctiornis amicta*). † The Semang of Ijok call the eclipse of the moon "haiup hilud" "butterfly swallow."

might not take place within the small (family?) division or "puwak," but that a man must seek a wife for himself outside. They gave as an instance the parents of Pachet the head of the "puwak," whose father, they said, came from the Jelai and his mother from Bukit Raya, Budu Lipis. "Man" their Malay "owner" stated in the presence of the Pangan and with their concurrence that, they were even more particular about marriage of cousins than the Malays. The Kuala Cheka Pangan on the other hand said that marriage within the puwak was allowed, and pointed out an engaged couple, but the fact that the girl was the daughter of the late Pangan Rajah, who had lived with the Ulu Cheka "puwak" would seem to rather invalidate her claim to be called one of the Kuala Cheka people. Unfortunately the writer was unable to enquire further into the matter owing to the short time during which he met the Pangan; so that the existence of exogamy remains a subject for further investigation. The only other fact gleaned with regard to marriage customs was that although allowable, it was unusual for a man to have more than one wife.

LANGUAGE.

The vocabulary obtained from the Pangan of the Ulu^u Cheka is published in a future number of this Journal with other vocabularies. Judging by this the people seem to speak a true Negrito dialect, for we have in it such distinctive words as chan (foot), wong (child), chias (hand), beling (arm), kukayu (banana), telabas (bear), makoh (egg), kelangis (liver or heart), ad (spear), hob (jungle), haing (mouth), tenud (lip), ai or aign (father), etc. Only a single numeral other than Malay forms could be obtained from the Pangan this being "nai," "one." There are one or two interesting words in the vocabulary which do not seem to be included in the comparative vocabulary in Skeat's *Pagan Races*, e.g., chenorong (neck), talu (old), talok (tiger).

ON TWO PANGANS LIVING WITH THE JAKUN OF KUALA RETANG.

(PLATES XXXI, XXXV.)

The two individuals dealt with in the following notes were members of a small and nearly extinct tribe of Negritos, called Orang Bukit (Hill-Men), who were said to live not far from the Kuala Besut* in Trengganu. Of the two, one was a man, probably about 26 or 27 years old, the other, a boy, 13 or 14. The Sakai said they had adopted them both while quite young, apparently on two different occasions of their making journeys to the Besut river in search of gutta-percha and other jungle produce. On questioning the Sakai as to the existence of other members of this Pangan tribe

* The Retang Sakai described the Besut country as in Kelantan, but as a matter of fact the whole of the Besut river lies within Trengganu, though it is not far away from the Trengganu-Kelantan border.

they at first replied that they were extinct, having been killed off by diseases, (*mati sakit*,) but on thinking the matter over further they said that there were still six other members of it left, who had all been converted to Islam. The writer is rather inclined to think, judging by the two males seen, that this "puwak" of Pangan must have been very pure. The hair of both individuals though cut short, appeared to be typically Negrito and in facial appearance they were also true to type, the childish character of the expression being particularly well seen in the elder Pangan. In the boy the skin colour was an intense black, but this character unfortunately does not show up well in the photographs. In the man the skin was affected by a form of skin disease, rather a different species from that causing the disease called "kurap." Owing to this the skin colour was masked by a scaly crust due to the disease which gave it a roughened whitish appearance, but probably in reality his skin was almost as dark as that of the boy. The man had married a local Sakai woman. Neither of the Pangan could speak their own native language, having been adopted at such an early age that it had been forgotten and replaced as their mother tongue by the dialect of the Retang Sakai.

The head measurements of the adult Pangan are:

Head length.		Head breadth.		Cephalic Index.
178 mm.	...	143 mm.	...	80.3

ON A PANGAN BLOW-PIPE OBTAINED ON THE TEKAI RIVER.

This blow-pipe was obtained from Kemaman Jakuns living on the Tekai river, who said that they had purchased it from a wandering tribe of Pangan who had camped at the headwaters of the river. The weapon consists of an outer tube of dark brown bamboo built up of two pieces, the proximal portion of the tube being much the longest (distal portion length 38 cms. proximal 184 cms). The join is effected by shaving down the further end of the proximal portion until the nearer end of the distal portion fits neatly over it. (The shaved down portion, length 1.6 cms., is not included in the measurements given above). To strengthen the tube further the nearer portion of the distal section of bamboo which covers the join is bound with Ijok (?) fibre string, and coated with some kind of gum or resin, (perhaps ambalou). The muzzle end of the outer tube is also bound in the same manner. Below the joint the outer tube is ornamented with the three circular bands of incised lines disposed at equal distances, each band containing four lines. The part of the outer tube nearest the mouth-piece has three similar bands, the distances between them being 3.5 cms. The upper of the two spaces between the bands is filled up with diamond shaped cross-hatchings. The lower or proximal end of the outer tube is again finished off with a binding of vegetable fibre string. The mouth-piece of the weapon is spheroidal and is composed of a ball of some kind of wild

rubber shaped around the end of the inner tube. This proximal end of the inner tube is slightly larger than the interior of the outer tube being cased for a length of about 10 cms. with a covering of bamboo rind which is slipped on over it, and adheres to it by its nearer end, which is enclosed in the rubber of the mouth-piece. The further end of this casing of bamboo is shaved down for a length of 3 cms. so as to fit into one end of the outer tube. There is thus at the proximal end of the blow-pipe a portion nine cms. long projecting from the outer tube, and consisting of the piece of the inner tube cased with bamboo and the mouth-piece. The inner tube proper is, as in the majority of aboriginal blow-pipes, composed of two internodes (or sections of internodes) of bamboo placed end to end and joined together by a tubular covering section of bamboo or other material attached with some kind of vegetable glue. In this case the covering section appears to be made from the outer skin or wrapping of some kind of palm or rattan. The inner tube does not reach quite to the further or muzzle end of the outer, and a small ring of bamboo is pushed down inside the latter until its edges abut on those of the inner tube. The proximal section of the inner tube is very short, measuring only 59 cms. from the end of the mouth-piece to the end of the covering section. The covering section is 17 cms. long, and the distal section of the inner tube measured from the further end of the covering section to its muzzle 153 cms. The total length of the whole weapon is 232 cms.

THE JAKUN OF THE TEKAI RIVER.

A short visit was paid to the Tekai river in company with the Dato Muda Bujal, a subordinate officer of the Tembling and Tekai rivers. Sections of two tribes were seen, which for the sake of convenience will be referred to in the following pages as the wilder and tamer tribes, respectively.

THE TAMER JAKUN.

(PLATE XXXII.)

The people have reached as high, or possibly a higher, state of civilization than that of the ordinary Malay peasant of Pahang. They were wearing very clean and new looking clothes of Malay type and had a far more alert air than the local Tembeling Malays, who were the most apathetic people the writer has ever met. With this progress in civilization the Jakun have of course become much less interesting from an ethnological point of view. In their customs and beliefs they no doubt remain to a certain extent unchanged, but in dress, manufactures, and weapons they now almost entirely follow Malay fashions. With regard to their manufactures, the household implements used were exactly similar to those of the local Malay; the blow-pipe was no longer made, and the only specimen seen in the settlement, that described above, had been obtained from a wandering party of Pangan.

TRIBAL NAME AND HISTORY.

The correct tribal designation of the people appears to be Menik Rantau (Men of the river reaches), the polite term used by Malays when speaking to them being Orang Dalam. They are recent settlers on the Tekai river having come from near the mouth of the Kemaman* river and, according to their own account, are closely related to the aborigines of Kuantan.†

HABITATIONS.

The houses of the tamer tribe were much like those of the local Pahang Malays. The chief's house consisted of a verandah and a single room with a cook-house (dapor) built out at the back.

DRESS AND ORNAMENT.

As mentioned above, the general dress of these people differs but little from that of the Malay. Though rapidly being discarded a few really non-Malay articles of dress were collected from them. Two of these were women's girdles of cord made from plaited strips of bemban (*Clinogyne grandis*) bark, one being coiled twelve the other forty-two times round the body. both girdles were fastened by the ends of the strings being tied to the coils. The only other object of personal adornment obtained was a neatly plaited bracelet of pandanus leaves, which was being worn by one of the children.

MUSICAL INSTRUMENTS.

Two musical instruments were seen and purchased, one a short bamboo flute with seven stops. of the type called "bangsi" by the Malays, the other a jews' harp made of some kind of palm wood, this being also similar to instruments used by the Malays. It was contained in an open bamboo receptacle made of an internode, with one of its adjacent nodes to form the bottom.

AGRICULTURE.

The Jakun had a fairly extensive clearing planted with Indian corn, dry or hill rice, and *ubi kayu* (tapioca.)

BOATS AND FISHING.

The ordinary boat in use among both the wilder and tamer people was a small dug-out prahu, exactly similar to that of the local Malays and of the kind usually called *prahu sampan* or *prahu sagor*. On occasions when a wooden boat was not to be obtained the Jakun were, however, said to make a rough canoe from a sheet of tree bark. Fish traps were also similar to those of the Malays. Although much used by the Malays, perhaps some mention should be made of rather a singular method of fishing which was observed. In this a small rod made from the mid-rib of a *bertam* palm leaf was used. To this were bound several rings of brass wire to carry the line. In place of a

* The Kemaman river is in Trengganu not far from the Pahang-Trengganu boundary. † Kuantan is on the coast of Pahang.

reel a winder of rattan cane was used, which was held in place against the butt of the rod with the right hand. No sinker of any kind was used on the line and the brass wire hook was baited with a whole fruit of the *jambu ayer*, bushes of which grow in abundance along the river banks in this part of Pahang. The line is cast as in fly fishing but owing to the rod only measuring about four feet in length, the casts are necessarily very short. After a cast has been made the line and bait are allowed to travel down stream, the rod point following them the while. When the line has reached the limit of its journey it is withdrawn and the performance repeated. The majority of the fish caught by this method are *ikan lampar*, which looks something like a cross between a roach and a carp. Two of these which were brought into the village would probably have weighed about a pound and a half each.

PHYSICAL CHARACTERS AND MEASUREMENTS.

In general appearance the Kemaman Jakun rather reminded the writer of the Besisi of Selangor. The facial type was somewhat ruder than that of the Malays and the angles of the lower jaw were usually strongly developed, giving the face rather a square look. In skin colour they were as light or possibly lighter than the surrounding Malay population. The hair was straight or only slightly wavy. The head measurements which are given in the annexed table were taken from four adult males.

Serial No.	Head Length.	Head Breadth.	Cephalic Index.
1	176	149	84.6
2	181	147	81.2
3	192	147	76.5
4	170	141	82.9

RELIGION, SUPERSTITIONS, Etc.

Very little but negative evidence could be obtained with regard to the religion and superstitions of the tribe. Certain spiritualistic ceremonies, such as the Malays term *berhantu*, are performed in cases of sickness by the medicine man of the tribe.

PAWANG'S SWITCH.

An article used by the Pawang (medicine man) in the *berhantu* ceremonies was obtained from the Pengghulu, or head man who also acted as pawang of the tribe. The instrument consists of a bunch of rattan sticks, made by bending three lengths of rattan cane double and placing a seventh stick in the middle of the bunch. The bundle is fastened together at the end where the lengths of cane are bent up, with an ornamental binding of split rattan. The instrument is similar to rods used by Malay pawangs in divination, chiefly for tracing thieves or recovering lost property. A very good illustration of three collected by Mr. W. W. Skeat is given in "Man" No. 40 (1902) together with an article on their use by Prof. E. B. Tylor.

LANGUAGE.

The vocabulary obtained from the Kemaman section differs considerably from that used on the Retang river, one of its peculiarities being the use of the word "mesong" for "five." The only tribes recorded by Skeat in the *Pagan Races* as using this word, or forms of it, are those of the Ulus (head waters) of the Tembeling, the Cheres, the Endau and the aborigines of the Seriting river. The people of the wilder tribe, said that they spoke the same dialect as the Kemaman people. Owing however to the short time spent in the locality the correctness of their statement was not put to the test.

THE WILDER TRIBE.

(PLATES XXXIII AND XXXIV.)

This tribe, or rather section of a tribe, was said to have recently come from Salang on the Tekam river, Pulau Tawar, where they belonged, and had settled down close to the tamer or Kemaman Jakun. The writer, finding the Tekam people the most interesting group of the two, devoted a good deal of the short time spent among the Tekai aborigines (two days) to investigating as far as possible their beliefs and superstitions. The results obtained will be found below. In dress like those of the tamer tribe this chiefly followed Malay fashions, but the clothes and the bodies of many of them, especially of the old men, left much to be desired in cleanliness. One very old man, as can be seen in plate xxxiii, is wearing a T-bandage loin-cloth of European material. The skin disease known as "kurap" (*Tinea circinata*) was common, being probably freely propagated owing to dirty habits. In personal appearance they were just as light as the other section. Their hair was, as a rule, either straight or slightly waved, but in the man who is the second from the right in plate xxxiii it is distinctly curly. Chin beards were not uncommon among the older men, but the hair in them was rather weak and straggly.

HABITATIONS.

The houses of the wilder tribe were not visited but they were said to be similar to those of the Kemaman people.

DRESS AND ADORNMENT.

The only objects of dress and adornment other than the Malay clothes mentioned above were girdles of rattan, worn by the men, and bracelets of the fungus rhizomorph called *akar batu*, which were used by both men and women alike. The rattan girdles were made of whole peeled canes of small diameter, a cane about fifteen feet long being coiled several times round the body with the ends, which were shaved down for the purpose, tied together. An example of this type of girdle can be seen on the old man in plate xxxiii.

WEAPONS.

The only weapon seen was a single blow-pipe. This, together with the quiver belonging to it, were purchased for the Perak Museum. Both blow-pipe and quiver were of the same type as the specimen of each from Kuantan, Pahang, described by Mr. Skeat in "Man" 1902, No. 108. The blow-pipe consists of two lengths of hard wood, probably of the kind called penaga (*Calophyllum*) laid together and shaved down on the outside until they form a long cylindrical rod. The tube is made by cutting a groove with a semi-circular section along the adjacent inner faces of both of the lengths. The two sections of the tube are bound together with a long strip of rattan cane, which is wound spirally round them from the base to the muzzle. In most of the blow-pipes of this type the binding is covered with a thick coating of a black gutta-like substance, but the specimen obtained on the Tekai is coated with wild rubber of a red-brown colour. The mouth-piece, from the top of which the binding begins, is formed of the same kind of rubber moulded into a roughly conical shape. The muzzle is covered with a rather thicker coating of rubber than the rest of the tube. The total length of the blow-pipe is 169.5 cms., and that of the mouth-piece 12 cms. The Sakai informed the writer that both the blow-pipe and the quiver were made by themselves when living on the Tekam river, but said that the former had once been longer and had been cut down to its present dimensions owing to its having been broken. The quiver which is a very large specimen, with a length of 37.5 cms. and a diameter of 12.5 cms., has a flattish top of plaited pandanus leaves, which rises into four slight peaks at the edges. The plaiting of the pandanus is not finished off at the centre of the cover, a number of free ends thus being left, which cross and recross each other. The quiver contains a bundle of reed dart-holders of the usual type and seven short poisoned darts, and besides these two small spatulæ of *ipoh* poison are slipped into it at its edges. In the centre of the bundle of dart-holders are several memplas leaves (*Tetracea assa*?) which are used for polishing dart stems, a bone awl, vegetable fluff for packing behind the dart as a wad when placed in the blow-pipe, a spare dart head, and the two long tail feathers of a Larger Racket-tailed Drongo. In no case do the butt ends of the stems project through to the upper surface of the dart head as in the specimen described by Skeat. The quiver is ornamented on the outside at top and base with bands of roughly scratched-in patterns. For these the writer could obtain no names, except that the Sakai said that one pattern at the top was meant to represent a jungle flower, and one at the base bamboo shoots. The middle of the quiver is surrounded with a band of plaited cane to which are fastened the cords which attach it to the hunter's body, the rattan band being tightened around the quiver by means of two small wooden wedges which are driven in from above. A similar binding encloses the quiver at the base, but is without

wedges. The cover is attached by means of a fine cord which is tied to the base of one of the waist cords at one end, and is fastened to the edge of the cover at the other. There are in the Perak Museum several specimens of this type of blow-pipe and quiver, namely, a blow-pipe and quiver from the Ulu Rompin, Pahang; a blow-pipe and quiver from Kuantan, Pahang, collected by Mr. C. Wray; five blow-pipes from Pekan and Kuala Pilah and a single quiver from Batam Island, Singapore Straits.

PHYSICAL CHARACTERS AND MEASUREMENTS.

The remarks already made with regard to the tamer tribe apply almost equally well to the Pulau Tawar people, though perhaps the Sakai element was stronger than in the former group as very wavy or slightly curly hair was seen in several individuals, notably in a man, the second from the right in plate xxxiii.

The measurements given below were all three taken on adult males.

Serial No.		Head Length.		Head Breadth.		Cephalic Index.
1	...	181	...	144	...	79.5
2	...	188	...	142	...	75.5
3	...	182	...	146	...	80.2

THE JAKUN OF THE RETANG RIVER.

(PLATES XXXV AND XXXVI.)

With regard to these people, the remarks already made about the civilized condition of the tamer Tekai tribe apply equally well. They had adopted Malay clothing, manufactured no articles which could be described as being distinctively aboriginal, and the blow-pipe was no longer used. According to their own account, they belonged to the same tribe as the people of the Krau river, but they appear to have led rather a wandering existence, their journeys in search of jungle produce occasionally taking them as far north as the Besut country in Trengganu, whence, as described above, they had adopted two Semang. Until recently they said they had been living on the Tekai river, but had left that locality about two years before, owing to their clearings being constantly visited by wild elephants, which destroyed the crops. Their present settlement which lies only a few hundred yards up the Retang river consists of a large clearing containing four houses. The crops planted are, Indian corn, padi, and a little sugar cane, tapioca, and *kaladi*. Sireh too is grown to a small extent. Their houses resemble those of the Pahang peasantry. The following articles of property were seen in the house of the Battin or chief: two drums, of the type called *gendang* by the Malays, white pandanus mats, water vessels made from gourds or coconut shells, small pandanus baskets, winnowing trays, and a large gong of the sort known as *tetawak*;

all these articles being similar to those used by the Malays. The type of boat in use among the Sakai was also Malay, the small dug-out canoe called *prahu sampan* or *prahu sagor*.

TRIBAL OFFICERS.

The names of only two tribal officers were obtainable. These were (1) Batin (2) Pemangku.

The Batin, as mentioned above, was living at Kuala Retang, but the Pemangku with a small party of followers was said to have rejoined the rest of the tribe on the Krau river, when the Tekai settlement was deserted. The tribal titles are said to be hereditary in the male line.

PHYSICAL CHARACTERS AND MEASUREMENTS.

In appearance all the Retang people approximated to either the Sakai or Jakun types but perhaps the latter was the commoner, since in the majority of individuals the hair was as straight as in Malays. All the men had their hair cut close to the head with the exception of the young man shown in plate xxvi, upper figure, who had the back and sides of the head shaved, leaving a patch of hair over the forehead. No traces of Negrito blood were seen among the Retang people, though if the two adopted Pangan described above have children there will be a distinct strain of this blood introduced into the tribe. If the custom of adopting children of other tribes, or the adoption of men from outside into a tribe through marriage, be common, as they most probably are, it becomes easy to understand how individuals in Sakai or Jakun tribes may occasionally show distinctly Negrito characters or *vice versa*.

The head measurements obtained on the Retang, which were all taken from adult males, are given in the annexed table :

Serial No.		Head Length.		Head Breadth.		Cephalic Index.
1	...	179	...	145	...	81.0
2	...	184	...	146	...	79.3
3	...	181	...	139	...	76.8
4	...	172	...	144	...	83.7
5	...	181	...	148	...	81.8

The people of the Retang river, like those of the Tekai, are probably by origin a mixed-blooded Jakun-Sakai tribe. The measurements in so far as they go rather showing tendency towards brachycephaly.

TOOTH FILING.

Both men and women have the six front teeth in the upper jaw filed down.

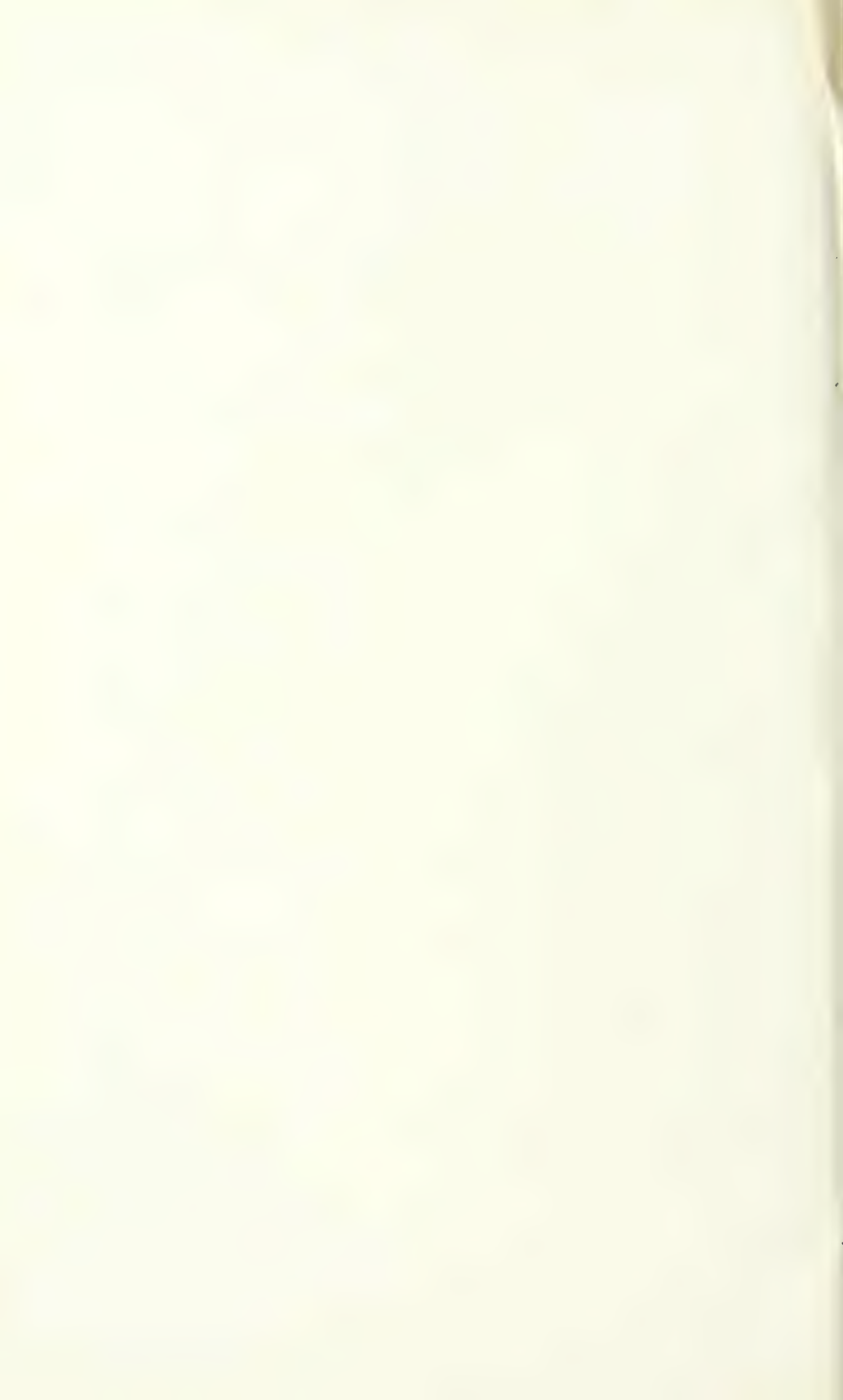
PERSONAL NAMES.

Three names of men obtained were all of Malay origin ; they were as follows, Brahim, Kasim, and Busol.



I. H. N. Evans, Photo.

PANGAN OF KUALA CHEKA, NEAR KUALA TEMBELING, PAHANG.





L. H. N. Evans, Photo.

PANGAN OF KUALA CHEKA, NEAR KUALA TEMBELING, PAHANG.



J. H. N. Evans, Photo.

PANGAN OF KUALA CHEKA, NEAR KUALA TEMBELING, PAHANG.



I. H. N. Evans, Photo.

PANGAN OF KUALA CHEKA, NEAR KUALA TEMBELING, PAHANG.





I. H. N. Evans, Photo.

PANGAN OF KUALA CHEKA, NEAR KUALA TEMBELING, PAHANG.





I. H. N. Evans, Photo.

JAKUN OF KUALA RETANG, PAHANG, AND TWO PANGAN, SAID TO BE
FROM KUALA BESUT, TRENGGANU.





I. H. N. Evans, Photo.

JAKUN (SAID TO BE ORIGINALLY FROM KEMAMAM), TEKAI RIVER, TEMBELING, PAHANG.





I. H. N. Evans, Photo.

JAKUN (SAID TO BE ORIGINALLY FROM KEMAMAM), TEKAI RIVER, TEMBELING, PAHANG.





L. H. N. Evans, Photo.

JAKUN (SAID TO BE FROM PULAU TAWAR, PAHANG RIVER) TEKAI RIVER,
TEMBEING, PAHANG.



I. H. N. Evans, Photo.

JAKUN (SAID TO BE FROM PULAU TAWAR, PAHANG RIVER,
TEKAI RIVER, PEMBELING, PAHANG)



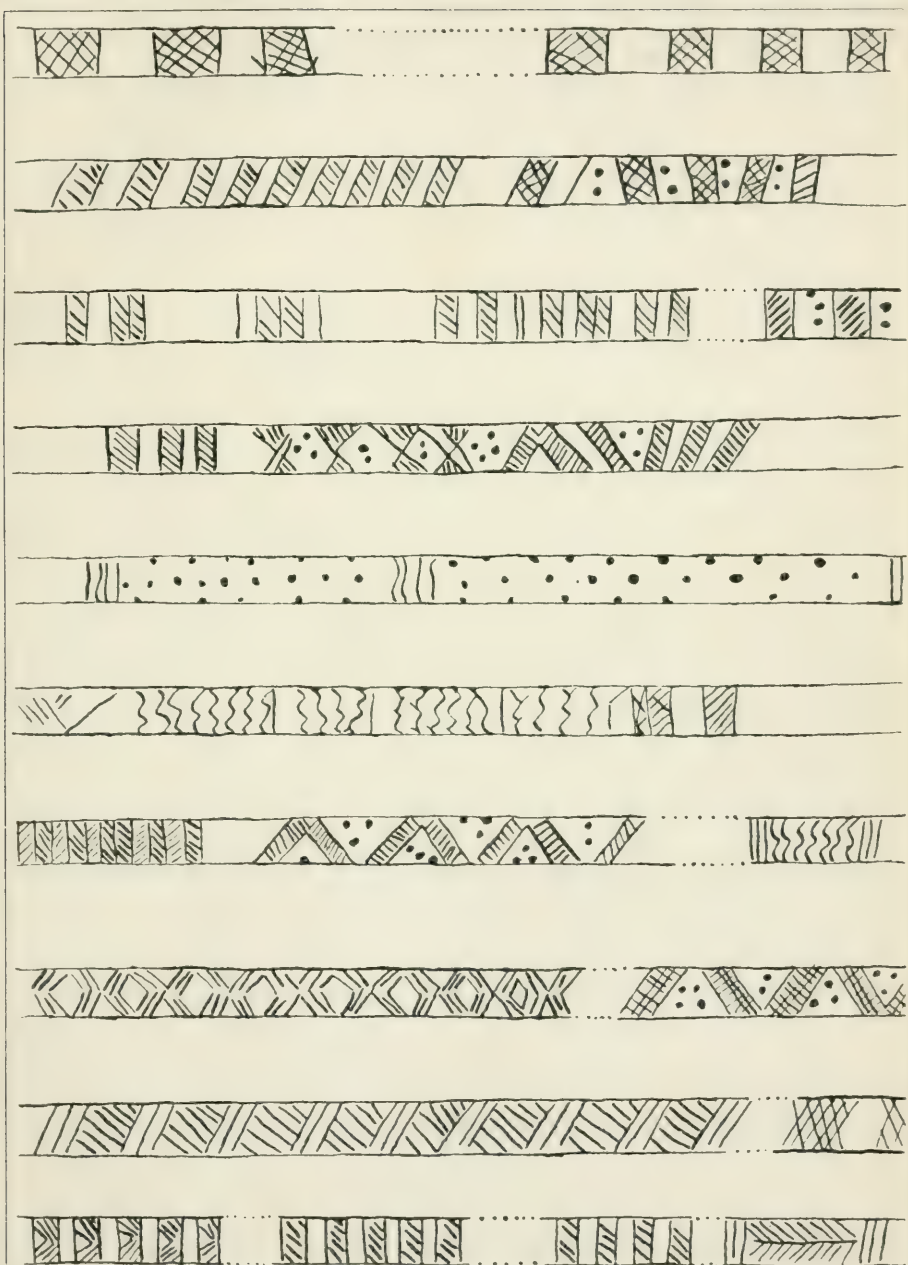
T. H. N. Evans, Photo.

JAKUN OF RETANG RIVER, PAHANG WITH ADOPTED PANGAN BOY
(Third from left of Picture).



I. H. N. Evans, Photo.

JAKUN OF KUALA RETANG, NEAR KUALA, TEMBELING, PAHANG.



PATTERNS ON WOMEN'S RATTAN GIRDLES



FIG. I

FACE PAINT PATTERNS ON PANGAN WOMAN



FIG. II

FACE TATTOOING ON PANGAN MAN

RELIGION, SUPERSTITIONS, ETC.

Though the people were very friendly, no account of their religious beliefs could be obtained, and most probably they have none. The bodies of the dead were said to be buried, and water, food and papaya fruit placed on the grave.

It is forbidden to mention the names of father-in-law, mother-in-law, brother-in-law or sister-in-law.

LANGUAGE.

The dialect spoken on the Retang river people seems to come under the division called Eastern Sakai by Skeat. There are many words of Malayo or Malayo-Polynesian origin in the vocabulary and several which are not found in the comparative vocabulary in Skeat's *Pagan Races*. Among these are "tiwok," (fever); "rek-rek," (cough); "idut," (mother); "kesir," (husband); "krakun" or "krakoin," (woman); and "mahong," (wind).

VOCABULARIES.

English and Malay.		Tekai river.		Kuala Retang.
Head (kepala)	...	... koie	...	... koie
Ear (telinga)	...	... untugn	...	... untang
Eye (mata)	...	... mot	...	... mat
Nose (hidong)	...	... moh	...	... hidon
Nostril (lubang hidong)	...	... serong moh	...	... leng hidon
Cheek (pipi)	...	... meng	...	... pipi
Mouth (mulut)	...	... kenut	...	... mulut
Lip (bibir)	...	... bibir	...	... bibir
Tongue (lidah)	...	... lepes	...	... lentak
Tooth (gigi)	...	... lemoin	...	... lemoin
Chin (dagu)	...	... jangkit	...	... dagu
Neck (leher)	...	... leng-ek	...	... lengek
Throat (tengkok)	...	... tengkok	...	... tengkok (k sounded)
Shoulder (bahu)	...	... kempoh	...	... bahu
Arm (lengan)	...	... bleng	...	... lengan
Elbow (siku)	...	... siku	...	... siku
Hand (tangan)	...	... ti	...	... ting
Thumb (ibu tangan)	...	... gadut ti	...	... idut ting
Finger (jari)	...	... jari	...	... jari
Finger-nail (kuku)	...	... tekok	...	... cherevis
Thigh (paha)	...	... belu	...	... beluk
Knee (lutut)	...	... kaltong	...	... kerk lual
Shin (tulang kering)	...	... kenhir	...	... jah arng kring
Foot (kaki)	...	... jong	...	... jong
Heel (tumit)	...	... tumit	...	... kukun

English and Malay.	Tekai river.	Kuala Retang.
Sole (tapak kaki) ...	.. tapak jong (k pronounced)	tapak jong
Toe (jari kaki) ...	... jari jong ...	... jari jong
Breast (dada) ...	... dening ...	... dadah
Back (belakang) ...	... chelora ...	... kerok
Heart (jantung hati)	... genos ...	... jantungg
Liver (hati)...	... grace ...	... huihom
Stomach (perut) ...	... leput ...	... kut
Navel (pusat) ...	... pusat, paring	... pusat
Intestines (isi perut)	... urat perut...	... lepeit kut
Blood (darah) ...	... maham ...	... mehem
Bone (tulang) ...	... je-ung ...	... jah-arng
Skin (kulit) ...	... getu ...	... ketuk
Hair (rambut) ...	... suk ...	... sok
Old (tua) ...	... tuhak ...	... tuhak
Young (muda) ...	... muda ...	... muda
Fat (gemok) ...	... gemuk (k sounded)	gemok (k sounded)
Thin (kurus) ...	... wat ...	... kurus
Hot (panas) ...	... pehel ...	... pret
Cold (sejok) ...	... kerot ...	... sengeit
Blind (buta) ...	... luk ...	... butak
Deaf (tuli) ...	... churig ...	... pekak, tuli
Dumb (bisu) ...	... budol ...	... leluk
Fever (demam) ...	... kerot ...	... tiwok
Itch (kurap, kudis)	... barlal, kudis	... kurap, kudis
Vomit (muntah) ...	... kwuk ...	... kukup
Gripes (sakit perut)	... jelpoit ...	... inyak kut
Diarrhoea (cheret) ...	... cerot ...	... cheret
Cough (batok) ...	... kokol ...	... rek rek
Dead (mati) ...	... kebus ...	... kebus
Putrid (busok) ...	... si-it ...	... si-it
Father (bapa) ...	... ipah ...	... ibit
Mother (ibu) ...	... moie ...	... idut
Husband (laki suami)	... kenlug ...	... kesir
Wife (bini) ...	... kempun ...	... kenah
Male (jantan) ...	... iper ...	... koin
Female (betina) ...	... gadoh ...	... keung
Man (orang laki-laki)	... iper ...	... koin

[Appear to be no separate words for male and man, or if there is could not get them]

English and Malay.	Tekai river.	Kuala Retang.
Woman (orang perempuan). gadoh [The same thing seems to apply to the words for female and woman also to son and boy, daughter and girl]	...	... krakun
Person (orang) ...	... semark ...	... jah
Son (anak-laki) ...	... iper enwok	... iwak krakoin
Daughter (anak perempuan) enwok gadoh	...	... iwak krakun
Child (kanak-kanak) ...	... enwok kanek	... iwak kwakweit
Boy (budak laki-laki) ...	... kenkon kenlug	... iwak krakoin
Girl (budak perempuan) ...	... kenkon gadoh	... iwak krakun
Maiden (anak dara) ...	... kenkon mudah	... iwak kaduah
Elder brother (abang) ...	... yi-eh ...	... yi-em
Elder sister (kakak) ...	... gah-ū ...	... yi-em
Younger brother (adek) ...	... adek ...	... adek krakoin
Younger sister (adek perem- puan)	... adek gadoh	... adek krakun
Elephant (gajah) ...	... gajah ...	... gajah
Rhinoceros (badak) ...	... badak ...	... badak
Tapir (tenok, badak tam- pong)	... putaih ...	... badak murai
Gaur (seladang) ...	... sčladang ...	... sčladang
Bear (beruang) ...	... kemol ...	... bčruang
Deer (rusa) ...	... rusa ...	... suk
Chevrotin (napoh, pelandok) pelandok	...	... napoh, pelandok
Wild-pig (babi hutan) ...	... jalu ...	... rap
Porcupine (landak) ...	... jėkos ...	... jėkus
Dog (anjing) ...	... čhor ...	... chu-uk
Wild-dog (anjing serigala) tedu	...	... chu-uk serigala
Tiger (harimau) ...	... kwep ...	... klak
Black panther (harimau kumbang)	... kwep kumbang	... klak kumbang
Wild-cat (kuching hutan) ... ?	...	... kuching brek
Cat (kuching) ...	... miow ...	... kuching
Bear-cat (benturong) ...	... kantua ...	... benturong
Civet-cat (musang) ...	... musang ...	... musang
Large squirrel (tupai nandong, kerewak)	... alaw ...	... peruk belang
Small squirrel (tupai kampong)	... chedek (k sounded)	... peruk hitam
Flying lemur (kubong) ...	...	... kubung

English and Malay.	Tekai river.		Kuala Retang.
Loris (kongkang, kera duku)	wat	...	... kongkang
Bamboo-rat (dekan)	... dekan	...	... dekan
Rat (tikus)	... karao	...	... tikus
Gibbon (ungka)	... chenloi	...	... ungka
Monkey (lotong)	... baseng	...	... tebuat
Monkey (kera)	... teraw	...	... boie
Monkey (berok)	... tadig	...	... daun
Fruit-bat (keluang)	... kawat	...	... kaweit
Bat (kelawar)	... pur pur	...	... kelawar
Crocodile (buaya)	... kerlok	...	... bah eiah
Monitor-lizard (biawak)	... griang	...	... peruk
Grass-lizard (bengkarong)	bengkarong	...	... merong
Flying-lizard (chichak kubin)	ketut	...	... klechek
Land-tortoise (kura-kura, baning)	yeah, sul	...	... kurak, baning
Water-tortoise (labi-labi)	... pa-as	...	... labi
Snake (ular)	... ti jaw	...	... tulun
Python (ular sawah)	... talun	...	... telan
Frog (katak)	... jangok	...	... kabatak
Fish (ikan)	... ka	...	... kak
Horn (tandok)	... tandok	...	... tandok (k sounded)
Tusk of elephant (gading)	... gading	...	... gading
Tail (ekur)	... hateh	...	... sentak
Hornbill (enggang)	... terang	...	... chemgang
Hawk, eagle (lang)	... kalang	...	... klang
Owl (burong hantu)	... (pongok)	...	... tutut
Egret (bangau)	... (bangau)	...	... bangau
Jungle-fowl (ayam denak)	... ayam denak	...	... pok denak (k sounded)
Argus-pheasant (kuau, kuang)	kaung	...	... kuang
Green pigeon (punai)	... (punai)	...	... punai
Crow (gagak)	... ah-ok	...	... roh-ak
Kingfisher (pekakak raja udang)	'kakah	...	... chem pem prang
Woodpecker (pelatok)	... terenek	...	... belatok (k sounded)
Magpie-robin (murai)	... murai	...	... murai
Egg (telur)	... behleh	...	... peng-lung
Feather (bulu ayam)	... suk ayam	...	... sok pok (ksounded)
Beak (paroh)	... (paroh)	...	... parok

English and Malay.	Tekai river.	Kuala Retang.
Ant (semut) ...	... petom ...	... blas
Red ant (kerengga) ...	... kasu ...	... lek sok
White ant (anai-anai) ...	... darun ...	... anai
Bee (lebah) ...	... lawoi ...	... loi-eh
Honey (ayer madu) ...	... dak... ...	... toh loi-eh
Wax (lilin) ...	... lilin ...	... lilin
Hornet (tebuan) ...	... hong ...	... tebuan
Wasp (penyengat) ...	... pengket ...	... semoit
Fly (lalat) ...	... lalat ...	... lalat
Black scorpion (kala)	... kelantam ...	... ketep-lil
Small scorpion (kala jengking)	... kelantam ...	... jengking
Centipede (lipan) ...	... kai-ip ...	... keh-ep
Millipede (sepak bulan)	... guahr ...	... sepak bulan
Cockroach (lipas) ...	... semertah ...	... led-ek
Spider (laba laba) ...	... changbun ...	... chiambung
Coconut-beetle (kumbang)	... kumbang ...	... kumbang
Mosquito (nyamok)	... semoin ...	... kemud
Tree (pokok kayu) ...	... tampong delong	... tekoh nehok
Bough (dahan) ...	... roh ...	... dahan nehok
Root (akar pokok) ...	... tampong jemok	... akar nehok
Leaf (daun kayu) ...	... salar delong	... hlat nehok
Flower (bunga) ...	... bunga ...	... bukau
Fruit (buah kayu) ...	... buah delong	... pluk nehok
Fungus (chendawan)	... kulat ...	... tis
Bamboo (buloh, aur)	... lieu ...	... ding
Rattan (rotan) ...	... tali... ...	... sek
Thorn (duri) ...	... jerlah ...	... julak sek
Rice (padi) ...	... bar bar ...	... bah
„ (beras)...	... beras ...	... rokuak
„ (nasi) ...	... nasi ...	... ran
Banana (pisang) ...	... pisang ...	... cheng
Areca-nut (pinang)	... pinang ...	... pinang
Durian (durian) ...	... durian ...	... sempak
Tampoi (tempui) ...	... chao ...	... tampoi
Rambutan (rambutan)	... lengkiang ...	... (pluk) genteg
Sireh-leaf (daun sireh)	... sireh ...	... hlat gereg
Screw-palm (pandan, meng- kuang)	saket, (for both)	sket, pandan (sket loie sohok, leaf)
Terap-tree (terap) ...	... terap ...	... sohok
Forest (hutan) ...	... bri ...	... brok

English and Ma ay.	Tekai over.	Kuala Retang.
Yam (ubi kayu) ...	... bakoi delong	... kehnehok
„ (keledek) ...	... keledek ...	... silak
„ (keladi) ...	... lebor ...	... lebul
To walk (berjalan)...	... lasuap ...	... chi chip
„ run (lari) ...	... lah-paru ...	... perduk
„ stand (berdiri) ...	... au ...	... jinjuong
„ sit (dudok) ...	... kom ...	... nerh nok
„ lie down (berbaring) ...	... dum ...	... dendum
„ sleep (tidur) ...	... yetek ...	... chek
„ snore (berdengkur) ...	... sedul ...	... bersenur
„ jump (melompat) ...	... lompat ...	... mehamu
„ climb (memanjat) ...	... hial ...	... weigh
„ hold (pegang) ...	... kum ...	... chep
„ lift up (angkat) ...	... angkit ...	... ampuh
„ throw (lempar, lontar)...	... pingkah ...	... lempar
„ scratch (garu) ...	... geh ...	... kukeit
„ spit (ludah) ...	... toh ...	... tuoh
„ bite (gigit) ...	... goin ...	... gigit
„ pinch (chubit) ...	... chekit ...	... cheket
„ wash (membasoh) ...	... sut... ...	... soit
„ bathe (mandi) ...	... moit ...	... mah-mu
„ cook (memasak) ...	... pachin ...	... n'chel
„ eat (makan) ...	... inchar ...	... chichak
„ drink (minum) ...	... jeh-oh ...	... woh
„ chew (mamah) ...	... mamah ...	... reng
„ fly (terbang) ...	... kapoie ...	... terbang
Sun (matahari) ...	... mah tengie	... mat ketok
Moon (bulan) ...	... bulan ...	... bulan
Star (bintang) ...	... bintang ...	... bintang
Cloud (awan) ...	... awan ...	... awan
Mountain (gunong) ...	... gunong ...	... gunong
Hill (bukit) ...	... menum ...	... chong
Day (siang hari) ...	... tengi	... ketok
Night (malam) ...	... plit ?
Thunder (guroh, petir) ...	... kuroi ...	... kareh
Wind (angin) ...	... johung ...	... mahong
Rain (hujan) ...	... gemar ...	... mik
Storm (ribut) ...	... bruak ...	... bruak
Fire (api) ...	... us ...	... os
Water (ayer) ...	... tom ...	... toh
Smoke (asap api) ...	... i-oi us ...	... asap

English and Malay.		Tekai river.	Kuala Retang.
One (satu)	...	... moi	... satu
Two (dua)	...	... mar	... dua
Three (tiga)	...	... 'mpe ; five, mesong ; tiga six, anam	
Four (empat)	...	... empun	.. empat
Ashes (abu)	...	... tempup	... habu
Salt (garam)	...	... tepol	... pol
Tobacco (tembakau)	...	... tembakau	... takau
Stone (batu)	...	... batu	... temok (k sounded)
Earth (tanah)	...	... atai	... teh
A Clearing (lading)	...	... atai	... piruk
House (rumah, pondok)	...	... si-ah	... i-ek, senom
Roof (atap rumah)...	...	... palong	... keluong
Chopper (parang)	...	... woie	... nyem
Axe (kapak, beliong)	...	... kapak, beliong	... kapak, byliong
Knife (pisau)	...	... woie	... nyem
Cloth (kain)	...	... kain	... kain
Girdle (gendit, kendit)	...	... nom	... tali wong
Spear (lembing)	...	... tohok	... bulus
Blow-pipe (sumpitan)	...	... seput	... blau
Mouth-piece (pangkal sum- pitan)	...	tebong seput	... bam blau
Muzzle (mata sumpitan)	...	sentol seput	... mat blau
Quiver (tabong bekas luk damak)	...	luk	... tabong damak
Quiver-cords (tali tabong)...	...	dreh luk	... tali tabong
Dart (damak)	...	... kohol	... damak
Point of dart (mata damak)	...	pradas koh-ol	... chemak damak
Butt of dart (pangkal da- mak)	...	beloi koh-ol	... libut damak
Dart-holder (sarong damak)	...	plait koh-ol	... sarong damak
Poison (ipoh)	...	... uok	... ipoh

REMARKS ON SOME RACES OF CYNOPTERUS.

BY DR. KNUD ANDERSEN AND C. BODEN KLOSS.

"IN a paper on a collection of mammals from the Siamese Province of Bandon recently published in 'Journal, Federated Malay States Museums.' (Vol. V., p. 115; 1915) Messrs. Robinson and Kloss raise the question whether it would not 'be more logical to regard *angulatus* as a sub-species of *C. sphinx* rather than of *C. brachyotis*.' Perhaps I may be allowed to say a few words in elucidation of this subject. If you desire to separate *C. sphinx* (all forms taken together) as a *species* from *C. brachyotis* (all forms), then you must evidently draw at least a tolerably clear line between them. That is what I have tried to do by placing all the longer-eared forms together under the heading *C. sphinx* and all the shorter-eared under *C. brachyotis*. Destroy that line, as drawn by me, and so far as I can see, you destroy every possible line of demarcation between *C. sphinx* and *C. brachyotis* as *species*, for I can find no other clear character binding all the forms of *sphinx* together as contrasted with all the forms of *brachyotis* than the difference in ears. But destroying that line, that is exactly what you do in the moment you transfer *angulatus* (a shorter-eared form) to *C. sphinx* (the longer-eared group). This, therefore, is not a question of whether you would like to see *angulatus* placed under *sphinx* rather than under *brachyotis* still keeping *sphinx* and *brachyotis* as separate species, but whether you will leave matters as they stand or rather bring all the forms of *sphinx* and *brachyotis* together under one specific name.

"But it may reasonably be asked, why not unite them all? Because it would, at least over one large geographical area (and possibly over more than one, when we know the fauna of Indo-Malaya better), lead to a rather awkward result. In Sumatra you would have *three* different sub-species of the same species occurring together, *tithæcheilus*, *angulatus* and *brachyotis*. It is a thing I have succeeded in avoiding so far, and which I think certainly ought to be avoided if possible. Quite apart from that, place the three forms, a *tithæcheilus*, an *angulatus*, and a *brachyotis* in a series, together with their skulls, and few, if any, would hesitate for a moment in declaring that *angulatus* and *brachyotis* are obviously much more intimately related to each other than they are to *tithæcheilus*, or to put the same thing in other words, that *angulatus* and *brachyotis* are offshoots from one (the *brachyotis*) branch of the genus, *tithæcheilus* from a certainly related but clearly different branch (*sphinx*). *Angulatus* and *brachyotis* are bound together not only by the relatively shorter ears, but also by the relatively shorter cranial rostrum (less than one-fourth of skull), in both of which characters they differ from *sphinx* and *tithæcheilus*. But if that is so, if our material seems clearly to indicate the existence of two

'branches,' or 'stocks,' or whatever else they may be called, why not try to express it in our nomenclature of the forms, by separating all the forms into two groups ('species'), *sphinx* and *brachyotis*? But if that is admitted, then *angulatus* must come under *brachyotis*, or else we cannot draw a line between the two species.

"These are some of the considerations that guided me when working out this section of the genus *Cynopeterus*. Of course, if a form really does exist, in the north of the Malay Peninsula, in the Islands off south-east Siam, and possibly somewhere else, which possesses the skull of *angulatus*, but the ears of *sphinx* then an entirely new and unsuspected element is introduced into the genus. But unless and until the existence of such a form is properly established I should think it rather premature to discuss its probable effect on our arrangement." Knud Andersen.

The above remarks were made by Dr. Andersen in the course of a report on some Indo-Chinese fruit-bats but as they apply to material dealt with in this Journal and can well stand by themselves I have extracted them for publication here. As it is possible, from the criticism of our suggestion, that Mr. Robinson and I did not make ourselves clear, a few comments may not be out of place.

Dr. Andersen is quite right in attempting to draw a clear line between the species if possible (and in our notes we indicated no desire to "lump" forms of *sphinx* and *brachyotis* together). The differential characters he gave in so doing were, for the former, "ears long, 18-20.5 mm. from orifices; general size medium or large; forearm 66-83 mm." and for the latter "ears short, 13-18 mm. from orifice; general size small or medium; forearm 54.5-72 mm." while it now appears that the size of the ears is the primary feature, others being of somewhat less importance.

Dr. Andersen has suggested that our method of measuring is different from his, but we have used, as a matter of fact, that given above by him. It is the only measurement of the outer external side of the ear that can be taken with any uniformity and is so obvious that it suggests itself to every collector. The only possible alternative is the length of the inner external side from tip to base on the crown—quite another thing and not to be confused with the former.

As we have obtained a number of bats (*angulatus*, Miller) from the Malay Peninsula and elsewhere with ears from 18.5 to 21 mm. in length, as in the type series, it seemed to us that it would have been more logical on Dr. Andersen's own classification (and not on sentimental grounds), to regard that form as a small race of *sphinx* rather than a large one of *brachyotis* with which species it otherwise closely agrees: we had no desire to destroy the dividing line or to unite all the various forms; all we suggested was the transfer of one particular form from one side to the other.

Now, in his remarks, Dr. Andersen emphasizes the value of skull-characters which in the "Catalogue of Chiroptera" were only made use of (in connection with species here discussed) for subspecific differentiation. Distinctions based on skull characters are not to be lightly attacked, but I think in that case less importance should be attached to the ear dimension.

If we accept both *brachyotis* and *angulatus* as sub-species of *brachyotis* we have two forms of one species occupying the same localities: which is contrary to generally accepted opinion, for while nearly all zoologists recognize the inter-gradation of geographical races the great majority are not prepared to recognize overlapping or intermixture; that is to say you cannot have two sub-species of a species living side by side.

If, however, you are prepared to admit that two forms of a species do occur together there is no reason why three (or more) should not be accepted, so this alone is not good cause for not regarding *titthæcheilus* as a *brachyotis* too, though that course might certainly be less convenient.

Our suggestion was somewhat superficial, but at the moment we simply had in view the *Cynopterus* bats of the Malay Peninsula and Dr. Andersen's main dividing line of the section under discussion. To transfer *angulatus* across that line would not improve matters for then we should have two bats of the same species (*sphinx*), *titthæcheilus* and *angulatus* again living side by side. To overcome this difficulty we have three alternatives to choose from. Either *angulatus* has no real existence, the material forming it being part *sphinx* and part *brachyotis*—not very probable; or it is a very variable form of *brachyotis* of which the typical race is non-existent from Sumatra to Annam and Assam; or it is an independent species. In any case the character of the ears does not seem a very good one to rely upon for the separation of the primary forms—providing our measurements and those given for the type series are correct. C. Boden Kloss.

A NEW NAME FOR *MUS MICRODON*, KLOSS.

THIS name, applied by me to a rat from Tioman Island, South China Sea (Journal, Federated Malay States Museums, vol. 2, p. 145; 1908), is preoccupied by *Mus microdon*, Peters (Reise nach Mossambique, Säugeth., p. 149; 1852) so the *surifer* race of that locality may be known as *Epimys surifer binominatus*. C. Boden Kloss.







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